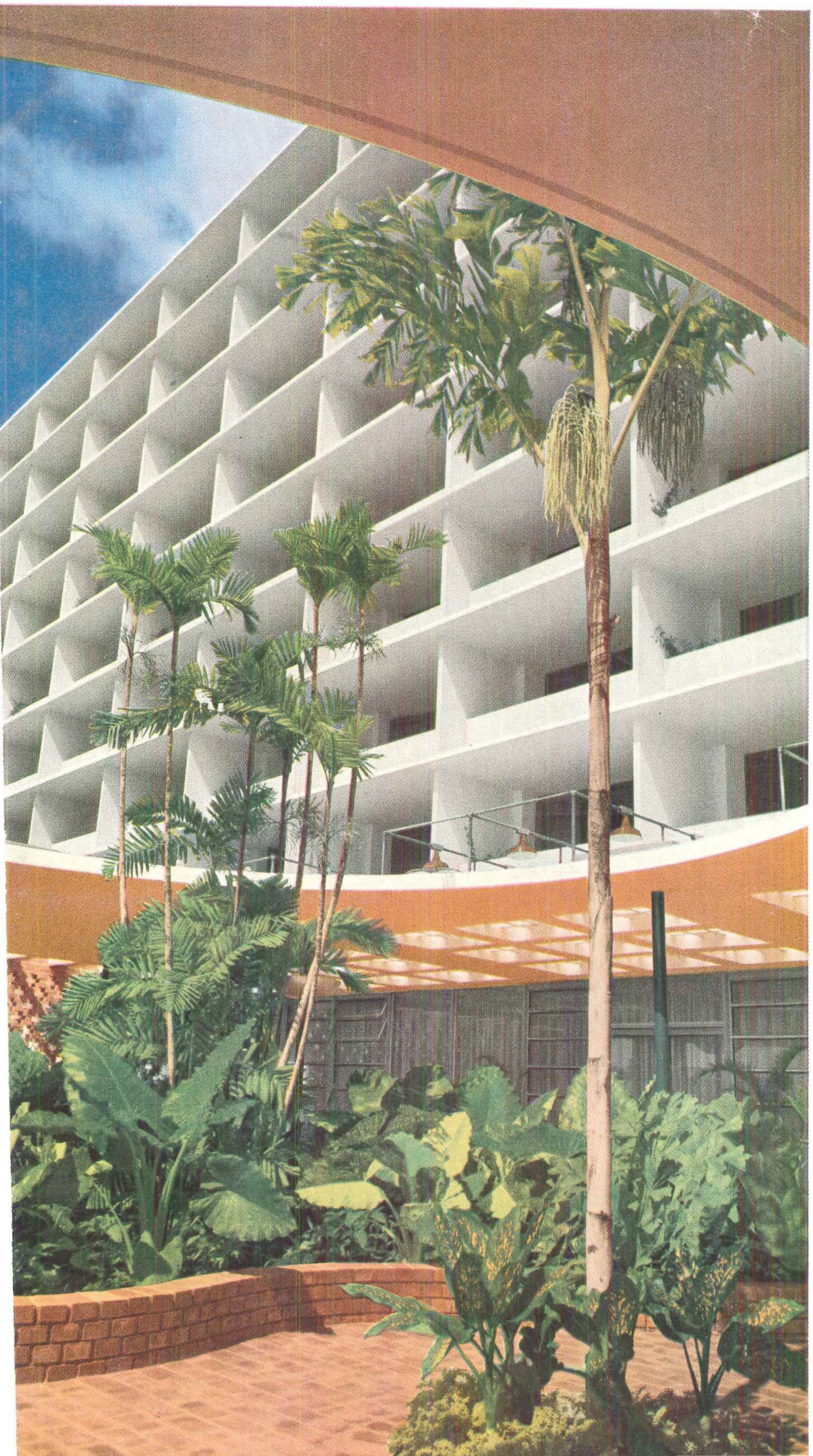
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APRIL 1951 94:4

ARCHITECTURAL FORUM

THE MAGAZINE OF BUILDING



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FHA's role in the attack on waste in home building (p. 101)

Defense housing lessons of World War II—a guide for today's boom towns (p. 122)

New Upjohn factory's flexible ceiling aids defense plant design (p. 146)

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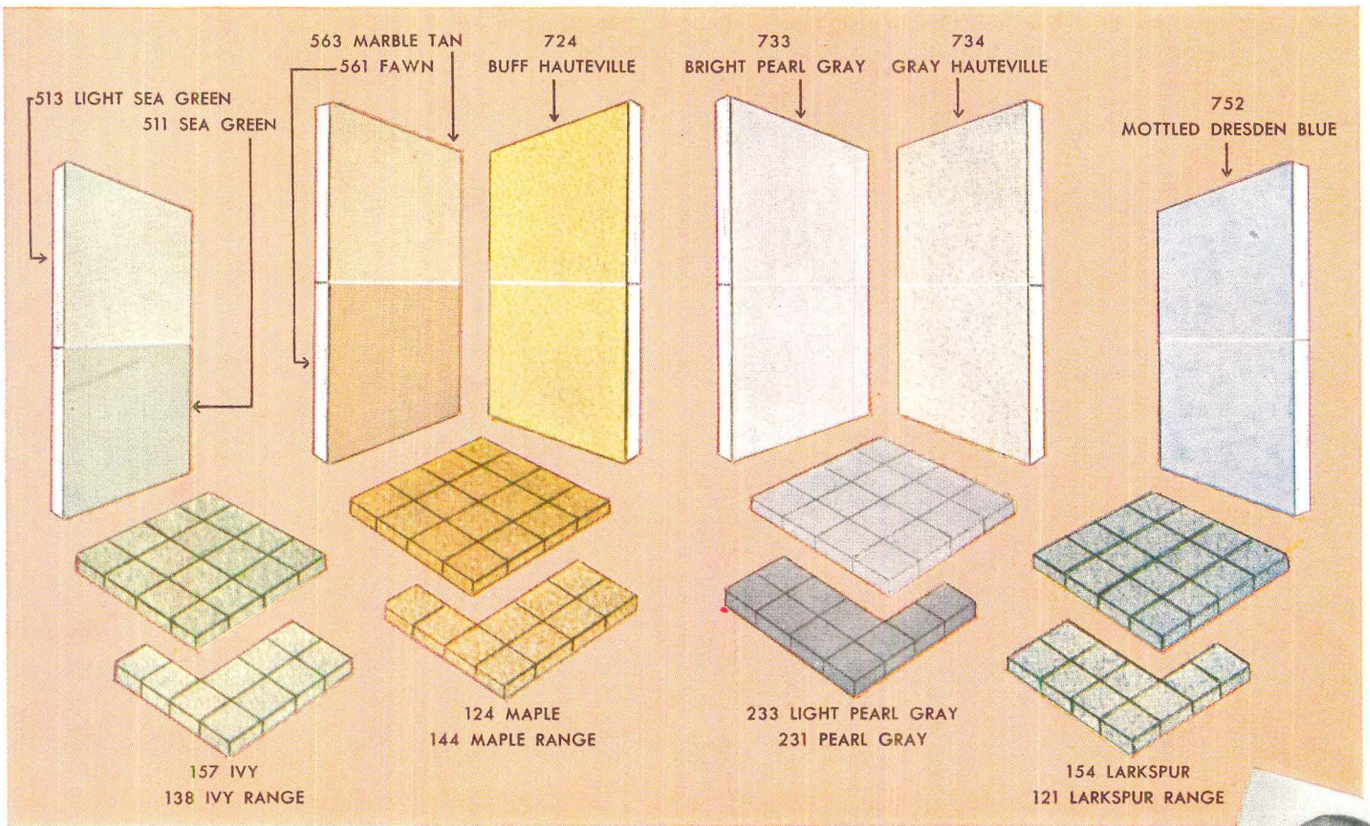
A new kind of apartment building for urban redevelopment (p. 128)

What makes panel cooling the most talked-about recent development in air conditioning? (p. 166)

these new *Suntile* colors

let you fit the color to the function

of industrial, institutional and commercial interiors...



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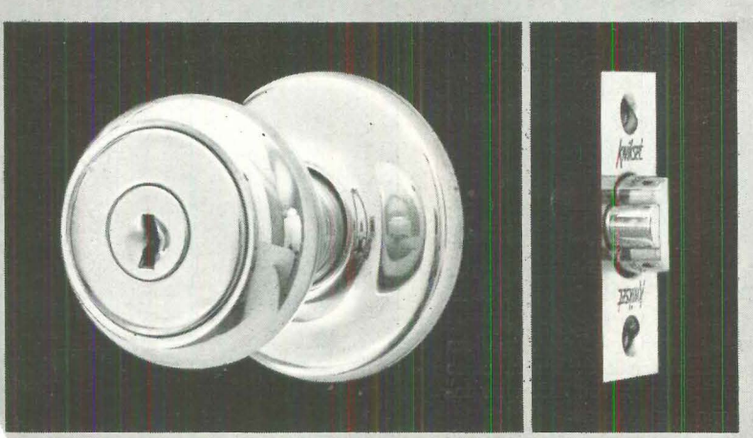
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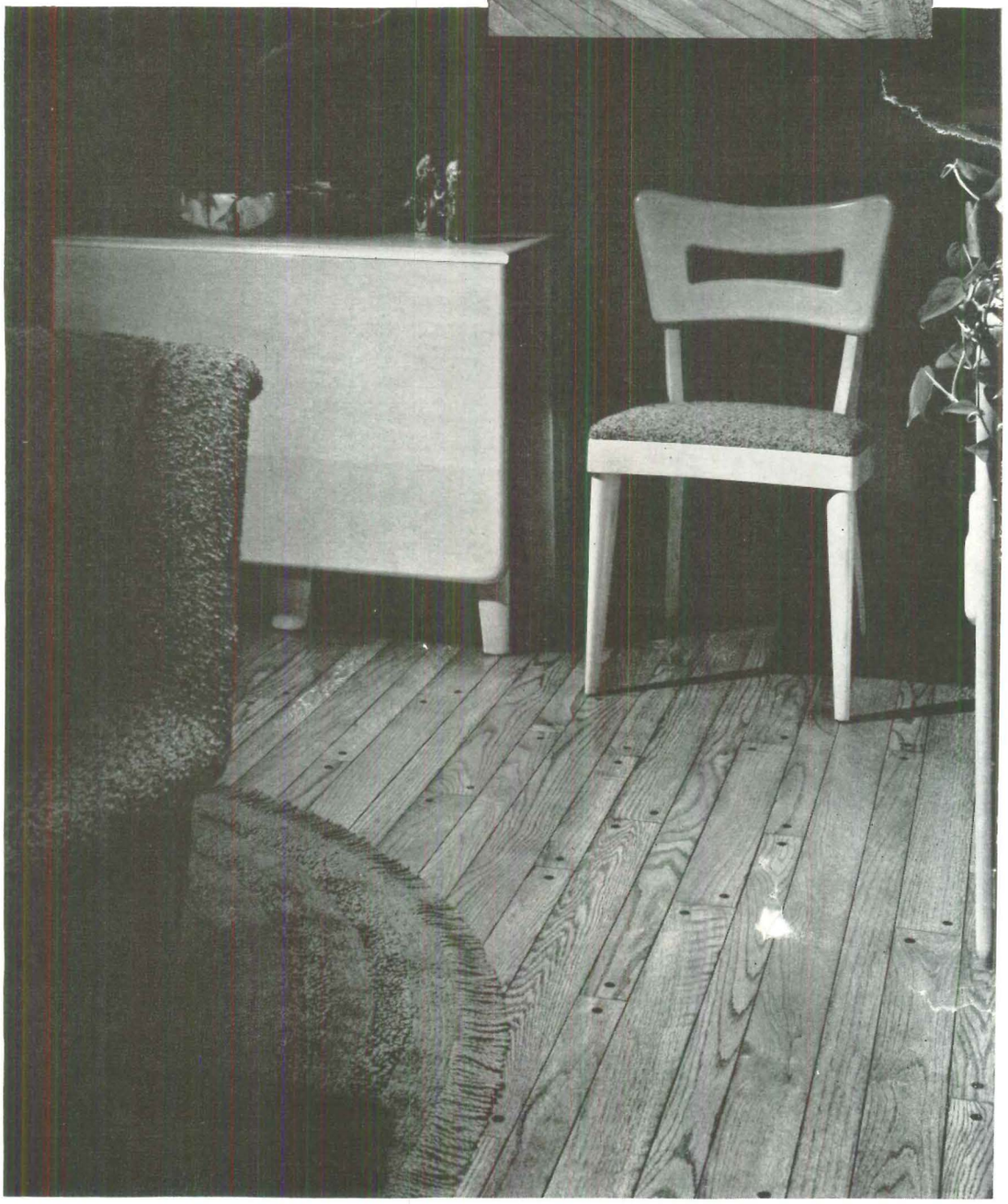


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THE MAGAZINE OF BUILDING

APRIL 1951

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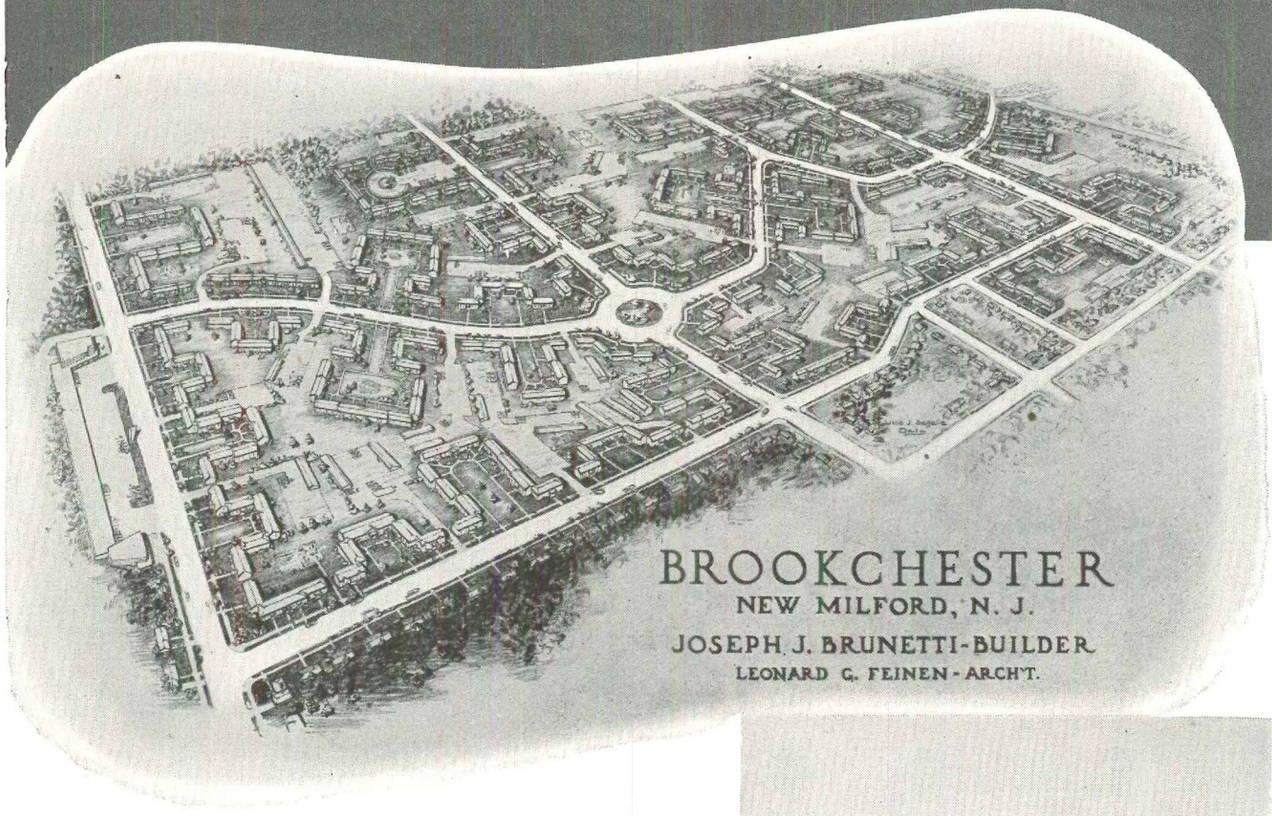
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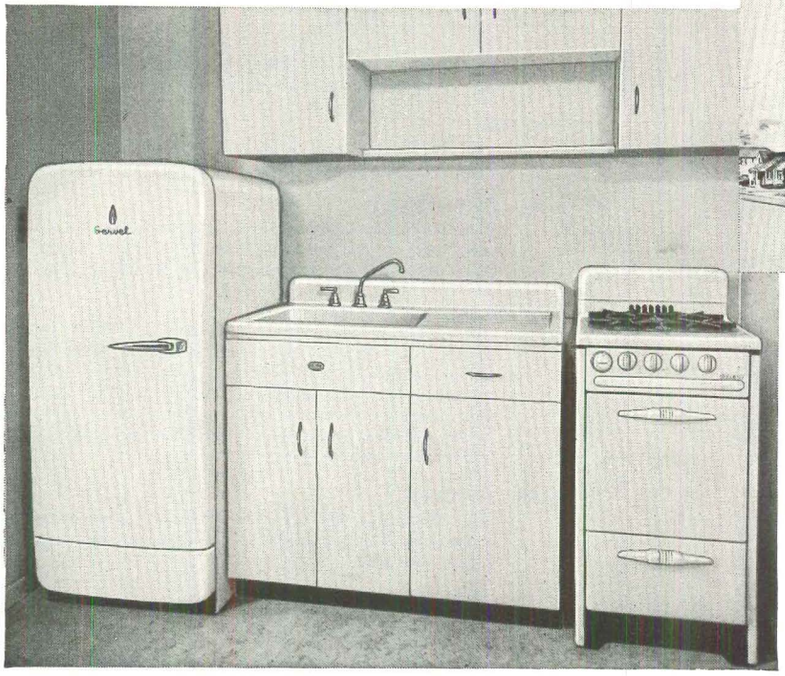
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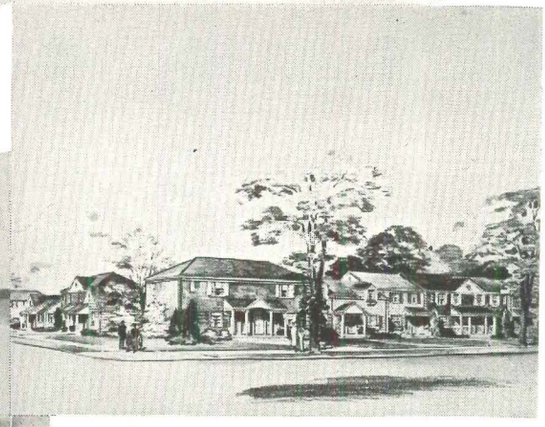
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VOLUME 94, NUMBER 4

Servel's lower upkeep







ABOVE is the Brookchester development at New Milford, N. J., where 2000 Servels are being installed. Another 2000 Servels are being installed in the modern garden apartments at Richfield Village, Clifton, N. J.

LEFT: New Servel Gas Refrigerator in a typical kitchen of a 3-room apartment at Richfield Village and Brookchester.

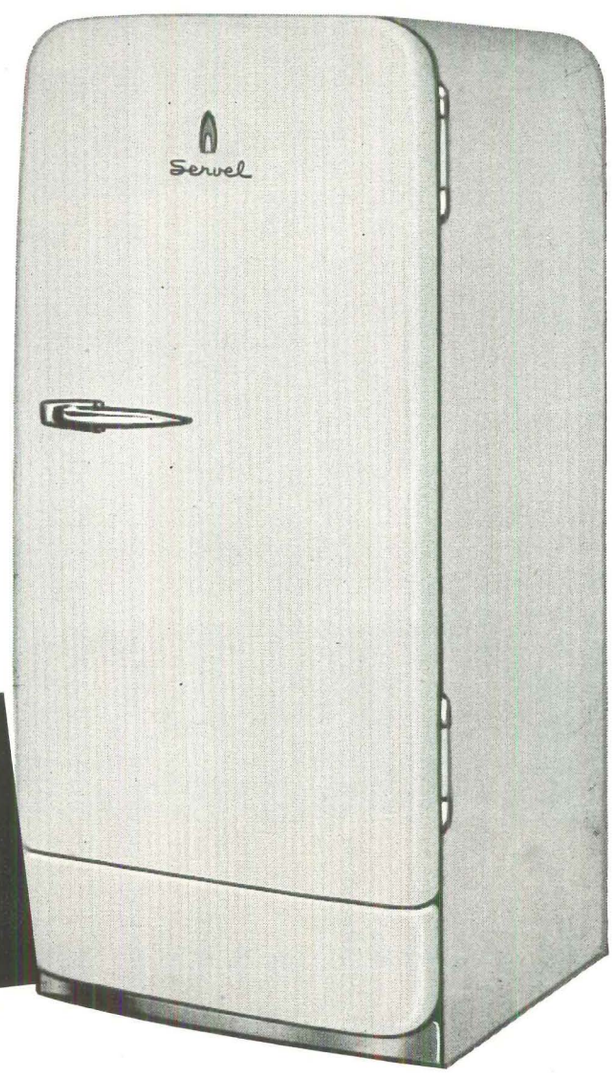
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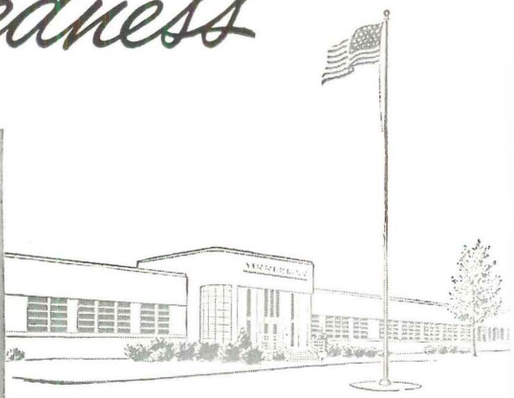
For full details consult Sweet's catalogue or write Servel, Inc., Dept. C-13, Evansville 20, Ind.



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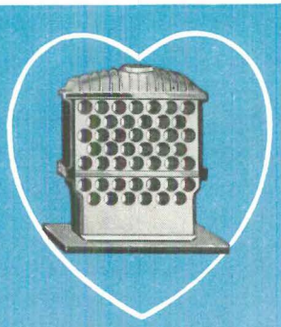
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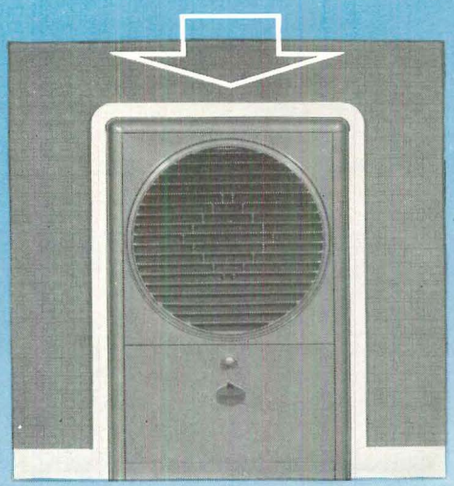
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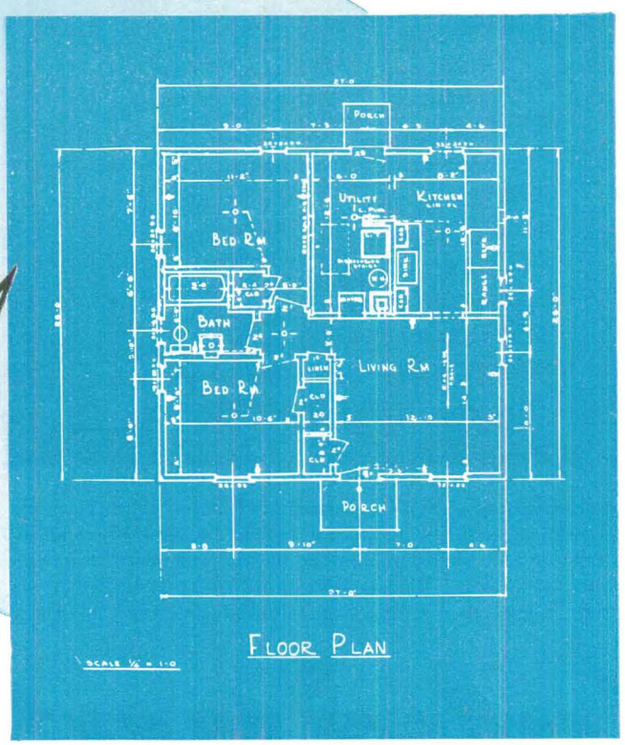
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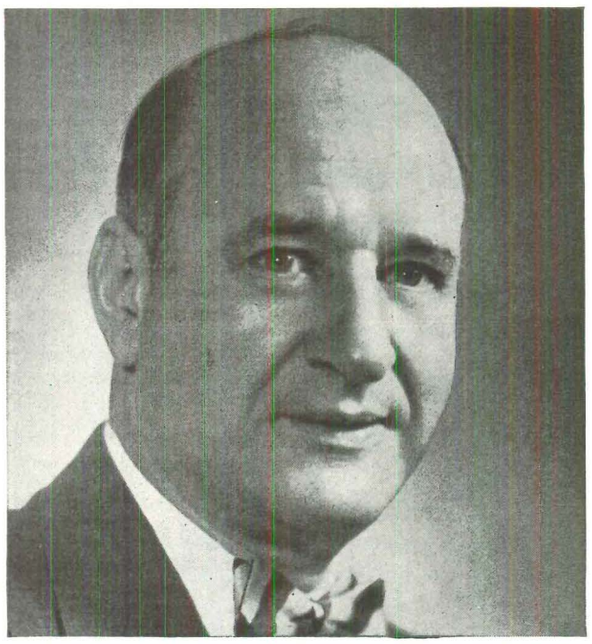
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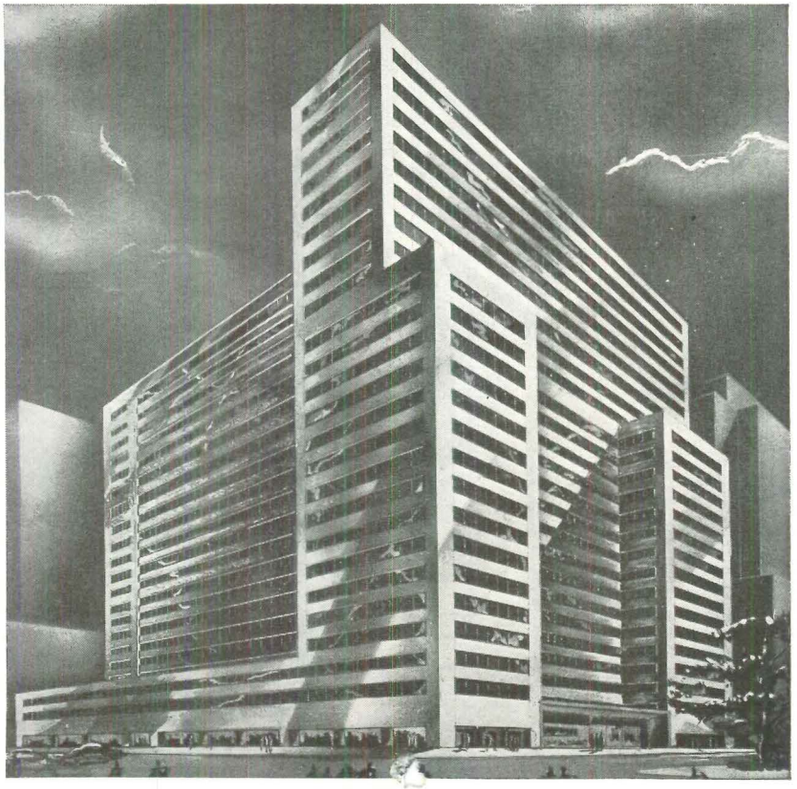
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Says Kevy K. Kaiserman, co-sponsor of the great new Rittenhouse Claridge and Rittenhouse Savoy projects in Philadelphia.

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With these words, Kevy K. Kaiserman, co-sponsor of the new Rittenhouse Claridge and Rittenhouse Savoy Apartments in Philadelphia, sums up why he and so many other successful builders choose Kelvinator for their new projects. Investigate the economies you too can make by selecting Kelvinator. For full information, write to Dept. AF, Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.





708 Apartments — 708 Kelvinators! Soon to tower over Philadelphia's beautiful Rittenhouse Square, the new Rittenhouse Savoy (left) and Rittenhouse Claridge (right) will offer "new concepts in modern living." Both projects will feature panoramic windows, year 'round air conditioning, sound-proofed cork hallways, autotronic controlled elevators. There will be a Kelvinator refrigerator for each of the Claridge's 482 apartments, a Kelvinator for each of the Savoy's 226. Co-sponsors are Kevy K. Kaiserman and Matthew H. McCloskey. Architects are Samuel I. Oshiver, J. Raymond Knopf and J. Ethan Fieldstein. Builder, McCloskey & Co., Inc.

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UNEXPECTED BOOM IN BUILDING, fueled by a plethora of materials, sparked by an urge to beat restrictions, speeds the industry down an uncertain road. No one is at the steering wheel, but the bankers have a hand on the brakes

Construction was booming more than anybody thought it had a right to. For rearming industry, new plants sprouted 106% faster than a year ago (no surprise). But commercial building was not yet hard hit by NPA restrictions (see p. 20). And housing—just when Federal planners hoped credit restrictions would start to bite—put on a Spring spurt. Even though FHA and VA applications continued to drop, builders started 100,000 housing units in March, the Bureau of Labor Statistics estimated.

Was it a boom on borrowed time? Was housing like a rosy-cheeked consumptive: bleeding to death internally? To try to find out, THE MAGAZINE OF BUILDING took a close look at one typical spot, northern New Jersey, and a broader glance across the rest of the nation. What emerged made a confusing picture. But a few facts stood out in fuzzy focus:

▶ The industry could be cutting its own throat in the rush to get homes built before materials, manpower and credit curbs make building harder: top Washington planners were thinking about tightening up controls further. Said HHFAdministrator Raymond Foley: "abandon the general housing program? We don't foresee it, but that doesn't say it might not happen."

▶ From $20,000 up houses were selling like hot dogs at a ball game, the very thing Regulation X aimed at preventing. Older, richer families could easily plunk down the money. "Last week," said one New Jersey builder, "I sold three houses in the $16,000-$17,000 bracket. All cash. I'm starting a lot more."

▶ In the lower brackets—$8,000-$12,000—for every builder who said credit curbs were hurting his sales, another said cash was plentiful among buyers.

▶ Warehouses bulged with material stockpiles, except for a spotty gypsum shortage. Experts who predicted a pinch this Spring now were explaining that it might arrive during the Summer. Material prices dipped and held. The BLS index for building materials stood at 227.7 for three weeks in March. It was 228.1 the month before.

▶ Defense mobilizers, however, stuck to their story that a controlled materials plan will begin July 1 for steel, copper and aluminum. Yet almost at the same moment, NPA postponed its ban on aluminum in storm windows and 200-odd other items to May 1. Washington talk was that military brass had overstated their requirements for the first half of the year. Builders shuddered at the prospect of controlled materials but most were game. "I have three kids. I have to build," said Louis Levin of Newark, N. J. "It means black markets," warned Alan D. Allen of Hillsdale, N. J.

▶ Prudent developers were designing around critical metals, putting plumbing back to back, eliminating as much flashing as possible, shifting from metal to wooden window frames and cabinets, even switching from structural steel to wooden trussing. Some had cuter gimmicks. One operator bought an old 138 ton locomotive for $5,200. He explained: "We were going to cut it up for scrap; but we've got it running now, so we'll wait. When steel gets too tight, I'll drive it to a mill and trade it in on what I need."

What lay ahead?

Largely conflicting opinions and great uncertainty.

Some cities, like Hartford and Denver, Wichita and Aiken, S. C., scenes of furious military and defense expansion, would clearly have a housing boom all year. But in Detroit, leading builders thought the drop in the last half of the year would make HHFA's 850,000 house goal look silly. They foresaw near collapse.

Builder Alan Brockbank of Salt Lake City: "Right now, we can sell most anything we can build. But we're jittery over materials later."

Builder Russell Benjamin, Ridgewood, N. J.: "I may build 60 houses this year, or 600."

A leading eastern office building architect: "Between July 1 and 15 there will either have to be a great relaxation of controls or there will be a complete shutdown of building."

One thing seemed sure: the housing industry, grown prosperous by national policy, was stuck with national policy (one banking lobbyist called it politics) for better or for worse.

Good news from Korea already had brought a letdown. Could the Administration keep the war pot boiling? That seemed to be the critical, unanswerable question. At least this side of Moscow.

LAST MONTH'S WASHINGTON DIARY

2/28 *NPA eases nickel order (M-14) to permit non-essential use of existing inventories of nickel silver, nickel plating, high-content nickel alloys and stainless steel beyond March 1 cutoff date*

3/2 *NPA limits volume of DO's that construction machinery manufacturers must accept to 50% average monthly output first half 1950*

3/3 *Treasury settles feud with FRB over interest rates, both agree to exchange $19 billion outstanding long-term bonds for new, non-transferable issue at 2¾%*

3/6 *Maj. Gen. Thomas F. Farrell appointed Deputy Defense Production Administrator for plant expansion; Rufe B. Newman named Director of Construction Controls Division, NPA*

3/7 *NPA orders 20% cut (over first half 1950) in use of steel by manufacturers of furniture, household appliances*

3/9 *HHFA and FRB relax Reg. X in atomic plant areas at Paducah, Ky., and Savannah River, S.C.*

3/9 *FRB requests financing institutions exercise voluntary curb on all lending to reduce inflationary pressures*

3/12 *NPA designates RFC sole importer of tin for resale on quota*

3/12 *NPA clarifies building ban (M-4), indicates exemption of several building types, including schools, libraries, churches, medical clinics, etc.*

3/14 *House defeats motion to bring Defense Housing Bill to floor for debate*

3/15 *Thomas B. McCabe resigns as Chairman, Board of Governors, Federal Reserve System, William McChesney Martin named to post.*

3/20 *HHFA holds first meeting of city building officials, members of its newly-formed advisory committee to prevent waste of materials in the defense emergency by amending building codes*

3/21 *FRB exempts multi-family units from Reg. X if "substantially" committed before 1/12/51, commercial building if committed before 2/15/51, both in cases of severe hardship*

3/21 *FRB lifts Reg. X to permit financing for 32 days after completion of one and two family houses under construction before 10/12/51, of multi-family units under way before 1/12/51, of commercial building begun prior to 2/15/51*

CAMPAIGN AGAINST WASTE gets going on the local level, gets a belated nod from DPA

The first project Chairman Howard Coonley laid before the Defense Production Authority's new Conservation Coordination Committee was implementing THE MAGAZINE OF BUILDING Round Table's program for cutting waste in construction.

In presenting the Round Table program, Coonley stressed its importance, not only for the savings it could make possible in America's biggest industry, but also for the example the building industry can set the nation in conservation.

The defense mobilizers had a brilliant ready-made blueprint for curbing waste. A joint committee of the AIA and NAHB had followed up the Round Table's judgment that an all-out attack could cut waste of materials, labor and money by 20 to 40%, spelled out the recommendations in detail

(Continued on page 13)

Consider maintenance before you specify

It's wise to look ahead to the cleaning and repainting needs of an acoustical ceiling before selecting a material. These maintenance requirements can often make a difference in your selection.

Maintenance is a more important consideration in some installations than in others. Hospitals and commercial kitchens, for example, will probably require more frequent maintenance than many other kinds of interiors where sanitation is not such a critical problem.

Because of the composition of acoustical materials and the various ways their surfaces are finished, acoustical ceilings vary in ease of cleaning and repainting. In addition to anticipating maintenance problems, it's also helpful for those who buy and specify acoustical materials to know how they are cleaned and repainted.

1. CLEANING

Dust or loose dirt can usually be removed from the surface of a material by brushing or vacuum cleaning. A vacuum cleaner attachment designed for cleaning upholstery or walls will do the better job.

If more thorough cleaning is needed, wash the material with mild soapy water, using either a moist cloth or a dampened sponge. Remove the soap with a sponge slightly dampened in clean water. Here are some points that you'll want to remember about washing:

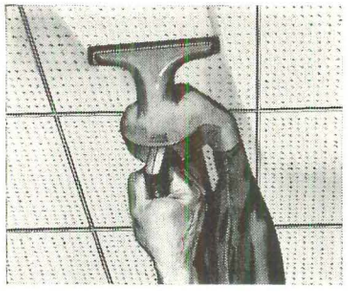
Perforated wood fiber materials may or may not have washable surfaces. Non-washable materials can be cleaned with a good wallpaper cleaner. Armstrong's Cushiontone, however, now has a new washable paint finish which was specially developed to make cleaning an easy job. Any marks or smudges that are not removed by washing can usually be cleaned off quickly with an ordinary artgum eraser.

Fissured mineral wool materials, like Armstrong's Travertone, should be washed with a minimum amount of water since moisture can have injurious effects on mineral wool. Care should be taken not to injure the fissured surface during cleaning. Use artgum for stubborn surface smudges on Travertone.

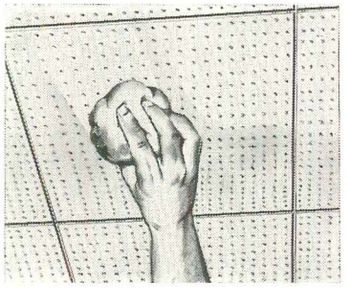
Fissured cork tile, Armstrong's Corkoustic, can be cleaned with a more liberal amount of water since cork has a natural resistance to moisture, but avoid scrubbing and excessive use of water.

Perforated metal pan materials, like Armstrong's Arrestone, are easy to wash because of the smooth enamel finish on the tile. It's important, however, to be careful that water is not forced through the tiny holes in the metal surface—the sound-absorbing pad inside must be kept dry. Apply the soapsuds with a good grade paintbrush (4″ bristles) rather than a sponge.

METHODS OF CLEANING ACOUSTICAL MATERIALS



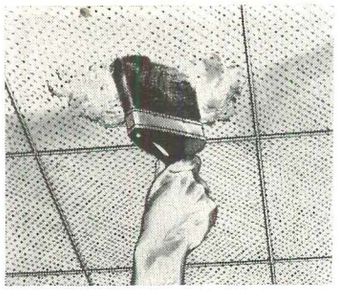
Vacuum cleaning. The nozzle of the attachment should be drawn lightly across the surface of the acoustical tile in one direction. This prevents rubbing dust into the surface.



Wallpaper cleaner. A good quality wallpaper cleaner can be used for fiber tiles. The cleaner should be fresh, since old cleaner often gets "sticky" and does not do a good job.



Dampened sponge. Materials with washable finishes, except metal pans, can be washed with a sponge dampened with mild soapy water. Rinse with a dampened sponge.



Suds cleaning. Suds made with mil soap flakes are applied with a goo 4″ paintbrush to the surface an bevels of metal pan units. Rins with damp sponge and clean wate

2. REPAINTING

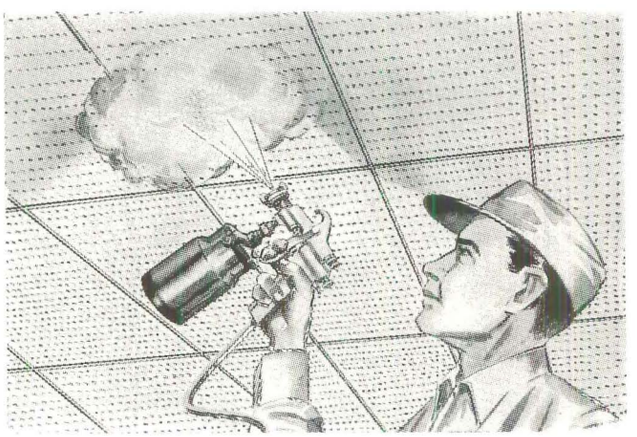
When painting acoustical materials, care should be taken not to close up the perforations or fissures in the material. It is through these openings in the surface that sound waves enter the body of the acoustical material and are absorbed.

A good grade of flat oil paint, suitable for interior finishes, is recommended for general use in repainting all Armstrong's Acoustical Materials. Cushiontone and Arrestone can be painted with enamels, if desired. Water paints should not be used since they have a tendency to warp acoustical materials.

There are two methods of repainting acoustical materials: spray painting and brush painting. Here are some helpful points about each.

Spray painting

Spraying is the more desirable method of paint application because it provides a smooth even coat, and there's

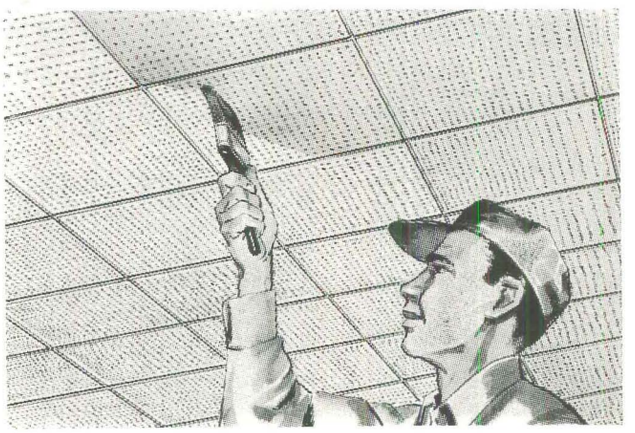


less chance of clogging the surface openings. To be sure of a good job, it's wise to make use of the best spray equipment available. Thin the paint as much as necessary for proper spraying, using the solvent recommended by the paint manufacturer.

First, remove loose dust from the material with a brush or vacuum cleaner. For Armstrong's Cushiontone, Travertone, and Corkoustic, apply the paint with a light spray. Direct it against the surface from all four directions in turn, using a rotary motion to get a uniform coating on the inner sides of the perforations or fissures. For Armstrong's Arrestone, direct the paint stream squarely against the surface of the material, moving the gun back and forth to get a uniform coating.

Brush painting

Careful workmanship is important in painting acoustical materials with a brush. The brush should be 4″

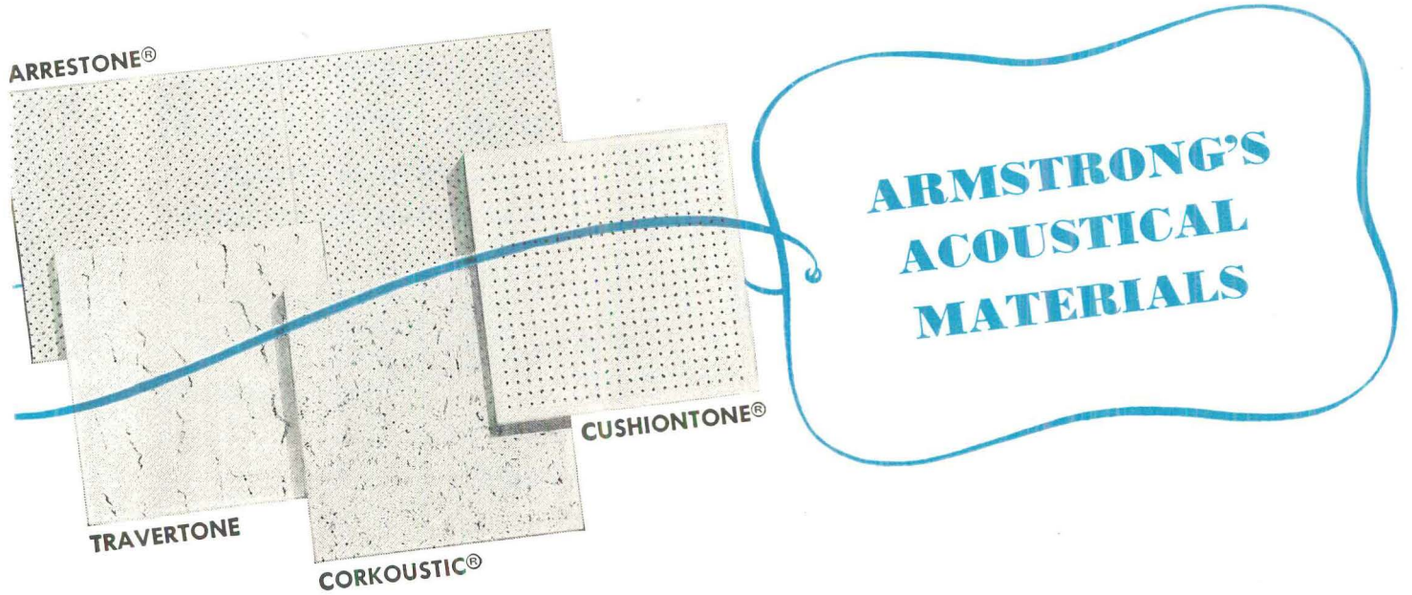


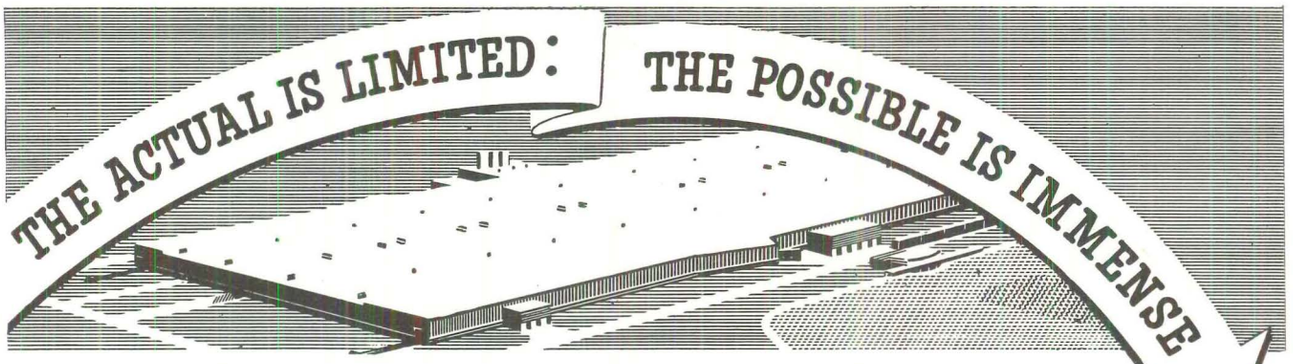
wide, with 4¾″ fine bristles.

Clean the material in the same way as for spray painting. If necessary, thin the paint to a consistency so that it won't close the perforations or fissures. In general, paint should be thinner for use on Armstrong's Travertone and Corkoustic than for Armstrong's Cushiontone and Arrestone.

Wet the brush thoroughly with paint. Wipe excess paint from the outside of the brush, then apply it to all four bevels of the unit first. Touch the surface of the material at several points to distribute the paint evenly and brush out this paint to a uniform coating.

SEND FOR FREE BOOKLET, "How to Select an Acoustical Material," which answers many other questions about sound conditioning. Write Armstrong Cork Company, 5404 Stevens St., Lancaster, Pa.





NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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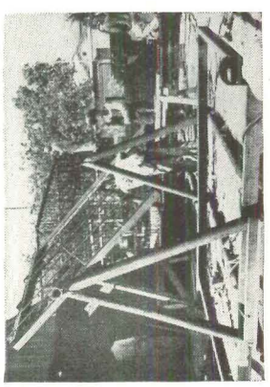
CUTS CONSTRUCTION COST $16,000

THE unit cost of this three-story office building has been reduced from $2.65 per square foot to $1.07 per square foot using welded sectional frames of steel studding.

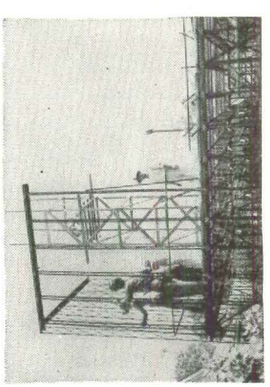
Representing an over-all saving of approximately $16,000, this building was erected in only 3 weeks, less than half the time otherwise required, and without the use of scaffolding. Its welded steel construction is fireproof, shrinkproof and free from warpage and provides greater ease for installing plumbing, wiring and insulation.

HOW TO DESIGN FOR LOWER COST

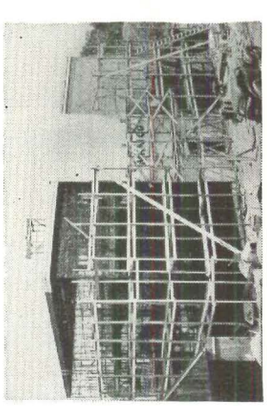
Latest structural design data is presented in the new 9th Edition Procedure Handbook of Arc Welding Design and Practice. Price only $2.00 postpaid in U.S.A.; $2.50 elsewhere.



On-the-ground prefabrication of 10-foot panel sections in assembly jig for fast, downhand welding.



Second floor all-welded sectional panel held in place for tack welding.



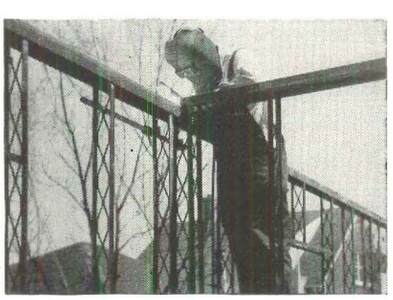
The new WKM Valve Co. three-story office building. The Matthews Construction Co. and the Brown Construction Co., contractors.

SAVES $10,000



30% Less Steel required for this garden shop, built with welded design for Sears Roebuck & Company, Compton, California. Construction cost cut from $30,000 to $20,000.

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Direct Saving of 50% over masonry realized in the construction of these multiple-story apartment dwellings in Shorewood, Wisc.

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(see p. 103). The AIA and NAHB executive committees endorsed them speedily.

Now it was up to Government. The authoritative Kiplinger Service pointed up one method. The Kiplinger forecast: The U. S. will set up materials-saving standards of its own. Builders who exceed them will not be allocated materials. With control of metals, the Government thus will have a big stick. Effort also will be made to force factory assembly and savings like prefab plumbing.

Government's first duty was to impose waste cutting on itself. AIA directors fired an angry blast at Federal nondefense agencies for "building as usual" despite material shortages. The AIA singled out VA hospitals and the public buildings service. Federal "somnambulists," it cried, were continuing to design luxuries like stainless steel walls in surgeries, solid brass hardware, copper flashing and downspouts.

Across the country, too, the idea of taking rearmament cost out of waste, not living standards, gained supporters. In Salt Lake City, the Utah Home Builders Association and AIA decided to set up a joint committee to press for local action against waste. The Mormon town was in the throes of re-writing its electric code. In Los Angeles, bustling Dave Slipher was named head of a local action committee. Biggest putsch of all was in Albuquerque, where builders felt they were on the verge of persuading the city to be the first in the country to adopt the new national plumbing code.

Inevitably, there were dissents. Secretary-Manager H. R. Northup of the National Retail Lumber Dealers announced "we emphatically do not" endorse the AIA-NAHB views.

He did not speak for all lumber dealers. President Deyo W. Johnson of William H. Deyo & Co., Ellenville, N. Y., declared the program worked "to the ultimate advantage of all home builders," called it "practical and concrete."

The most concrete demonstration was being blueprinted by the NAHB. Two homes would be built side by side, one under old-fashioned building codes of a yet-to-be picked city, the other under conservation standards set by the Round Table. Builder Clarke Daniel was interested in erecting the yardstick houses in Washington. He even hoped local officials would arrest him for violating local codes in the waste-saving house. This, project-promoters thought, would spotlight the need for action against building waste in a way even the Government could not ignore.

The job ahead was large. It seemed to be off to a hopeful start.

Photos: Len Rosenberg



MBA conference participants told Banker William A. Clarke (second from left, above) they agreed mortgage interest rates must rise. Left to right, R. O. Deming Jr., ex-MBA president; FHA Commissioner Franklin D. Richards (who shied away from forecasts); Clarke; Dr. Claude Benner, president, Continental American Life. T. B. King, VA loan guaranty chief (left, below) and HHFAdministrator Ray Foley (right) kept their talks non-committal.

BUILDING MONEY: boost in bond rates means fewer mortgages at higher interest

For the building industry, the increase in interest rates on long term Government bonds from 2½ to 2¾% was loaded with dynamite. Full import of the Federal Reserve-Treasury accord that fixed the rise was emerging by month's end:

Mortgages were going to be increasingly harder to place. Interest rates would go up —probably ¼ to ½%. That might be enough to force the Veterans Administration to follow suit or find virtually no lenders for GI loans. Even the ocean of insurance company money seeking mortgage investment was rapidly drying up. Neither commercial nor savings banks would be in the mortgage market to any extent the rest of this year. Some economists thought the new policy would do more to cut building volume than either Regulation X or the not-so-shortage of materials.

The definitive word on the shape of mortgage things to come was given the Eastern Mortgage Conference of the MBA in New York by balding, meticulous Banker William A. Clarke. He had spent two full days hopping between New York, Washington and his mortgage finance office in Philadelphia to gather up the figures. They spoke for themselves:

▸ $11 billion, or 30% of 1950's new investment money came from sale of government bonds. No wonder: with bonds supported by the FRB at 100 22/32 they were the same as cash because investors could unload without loss.

▸ With the interest rise, FRB has let bonds slip just under par. Now investors lose if they sell before maturity. Result: Clarke thought about 75% of the outstanding 2½% bonds will be converted to the proffered non-marketable 2¾s, and held.

▸ This "real attack on inflation" will have these results on the four main sources of mortgage money:



Commercial Banks—Time deposits sank $250 million in 1950 to $36 billion, while mortgage holdings rose $865 million to $12½ billion. No rise in deposits is in sight so "commercial banks will not be large mortgage buyers."

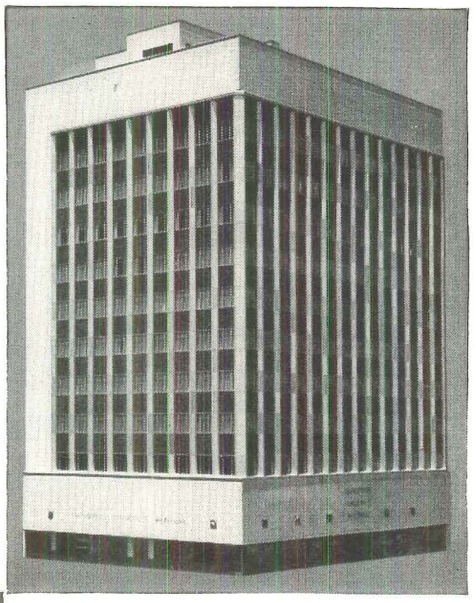
Mutual Savings Systems—Sold $500 million in government bonds last year to finance a net rise in realty loans from $6.4 billion to $8 billion. This now ties up 40.1% of their $20 billion deposits in realty, which is enough. Deposits are not rising; in fact, fell this February while mortgage holdings swelled. So savings banks will be "decidedly hesitant to commit for new mortgages."

Life Insurance Companies—Replaced low-yield government bonds with mortgages and other securities last year. Now, they will have to hang on to bonds (*see above*). About $6 billion in new money will be available for investment this year, but *at least $4 billion is already committed to mortgages!*

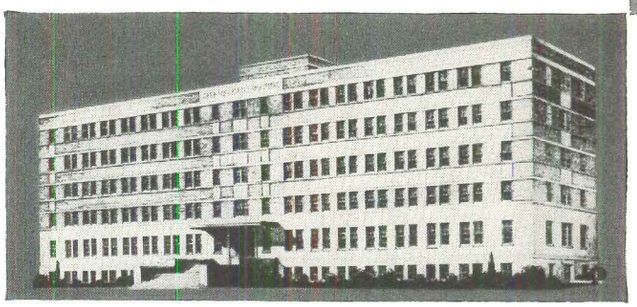
Savings and Loan Associations—Have 98% of their $14 billion capital tied up in realty already. Payoffs and capital gains will produce $3 billion more this year for mortgage investment—the only slice of the market untouched by the new Treasury policy.

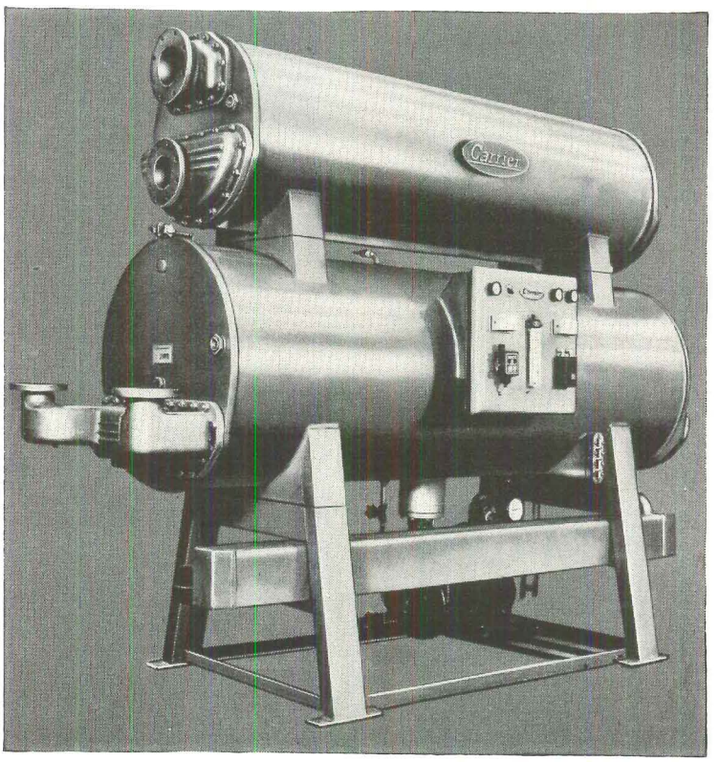
▸ Interest rates must rise because: It costs banks at least ½% to collect and keep books on mortgage loans. (One banker said it

(Continued on page 17)



FOR ROOF LOCATIONS





what refrigerating machinery is best?

They're putting the mechanical equipment on the roof nowadays. And for good reason. The move saves space, centralizes equipment, makes basements rentable.

The trend calls for compact lightweight air conditioning equipment like the new Carrier Absorption Machine.

It's smaller and weighs less per ton of capacity than any other refrigerating machine you can buy. Noise and vibration problems are out — because there are no major moving parts — just a small solution pump.

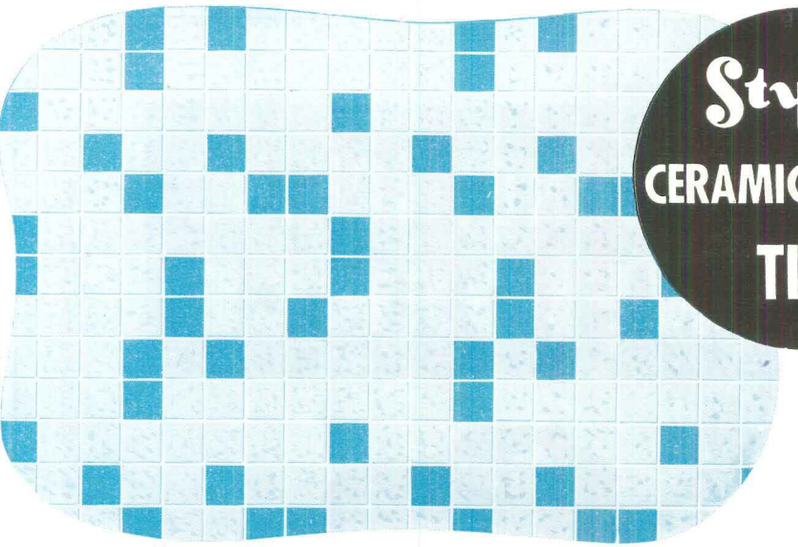
This Carrier Absorption Machine operates at a minimum cost, too. It uses steam (often idle capacity or waste steam) to produce cooling. The steam rate is less than 20 pounds per hour per ton of refrigeration. It automatically adjusts itself to partial loads — down to 10% of capacity, with sustained efficiency.

Send for our interesting folder describing new, lightweight 115 to 350 ton capacity refrigerating machines. Carrier Corporation, Syracuse 1, N. Y.

Top right: Employers' Insurance Building, Dallas.
Top left: Self Memorial Hospital, Greenwood, S. C.

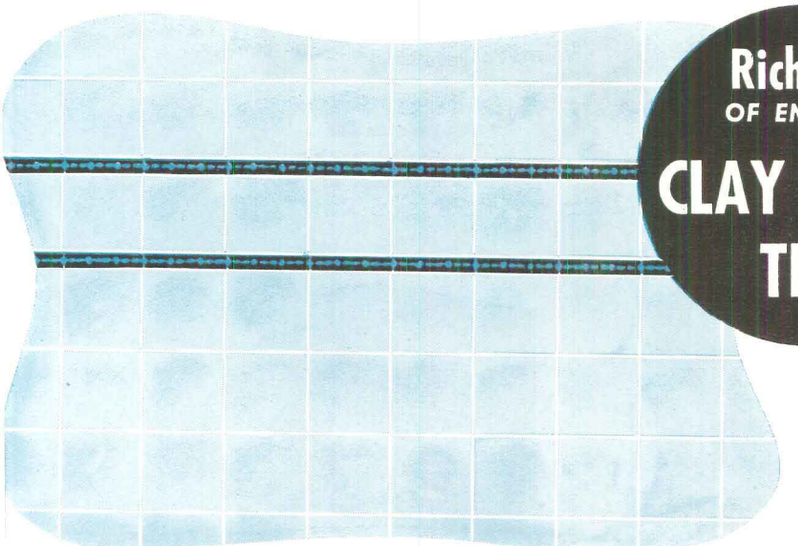
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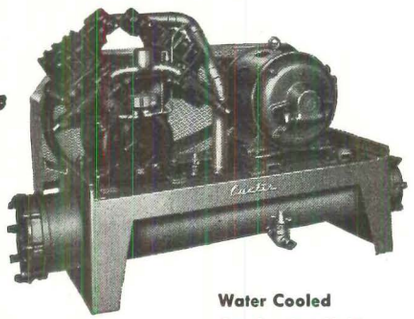
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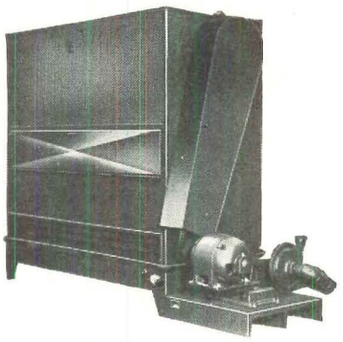
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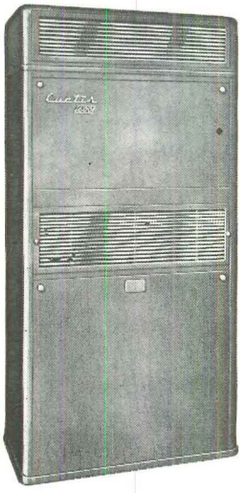


Water Cooled Condensing Units —through 40 Tons

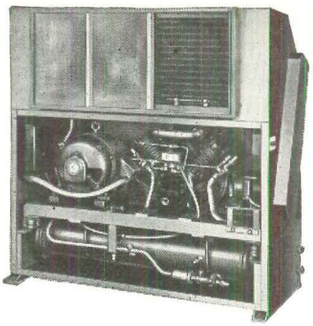
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Only a good Thermostatic Water Mixer Can Prevent Accidents Like These

Baby Girl Scalded in Bath Tub

A 14-months-old girl was burned critically today when she turned on scalding hot water while she was being bathed in the [redacted]

Mrs. Johnnie Mason, attendant at the nursery, said she was bathing Joan about 11:30 a. m. today just before the child turned on the hot water faucet.

'Heard a Scream'

"I stepped in the next room to get a towel," Mrs. Mason said, "and heard a scream. I ran back and grabbed her out of the tub." She said Joan stood up in the bath tub to operate the faucet.

Joan Dodd, daughter of

ALMOST "BOILED ALIVE" IN APARTMENT HOTEL SHOWER

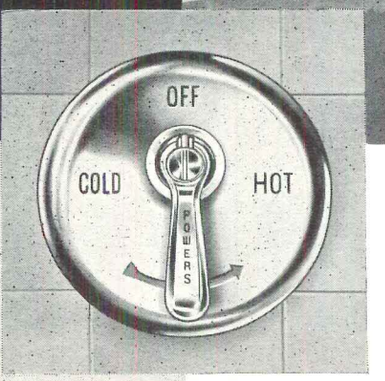
Seeking $40,000 damages for her injuries, Miss Rosalie B. Chivington, living at [redacted] a school teacher, yesterday in the Superior Court described how she was almost "boiled alive" in her shower in [redacted] Apartment hotel.

"I set the handle of the shower mixer at Warm," Miss Chivington testified. "Instantly a flood of scalding water was poured upon me, I slipped and fell into the tub."

"Unable to see be[redacted]use of th[redacted]

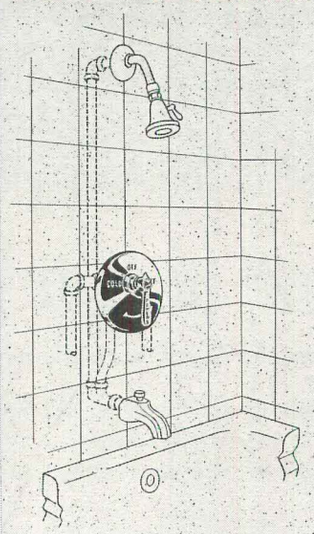
"BOOBY TRAP SHOWERS" are old-fashioned dangerous and expensive





Only ONE shower or tub accident may cost many times more than a

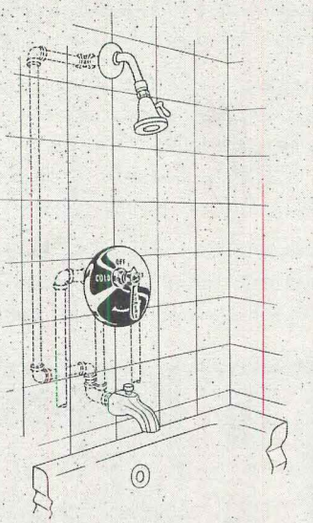
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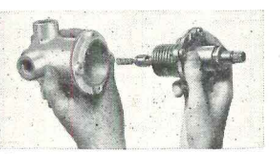
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How it works—Hot and cold water are piped to mixer where they are blended and thermostatically controlled at any temperature desired between 60° to 115° F. (Note safety limit).

For shower or tub bath, Powers mixer handle is turned to right until water flowing into tub reaches temperature desired. Then bather enters tub. For a shower, diverter spout knob is pulled up diverting water to shower head. When shower is completed, handle of mixer is turned to OFF. Diverter spout flapper valve returns to "tub" position automatically.



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Safety Features that give better control: (1) Powers mixers prevent delivery to shower or tub above 115° F., (2) Temperature remains *constant* wherever set regardless of *pressure* or *temperature* changes in water supply lines, (3) Failure of cold water supply instantly and completely shuts off delivery to shower or tub.

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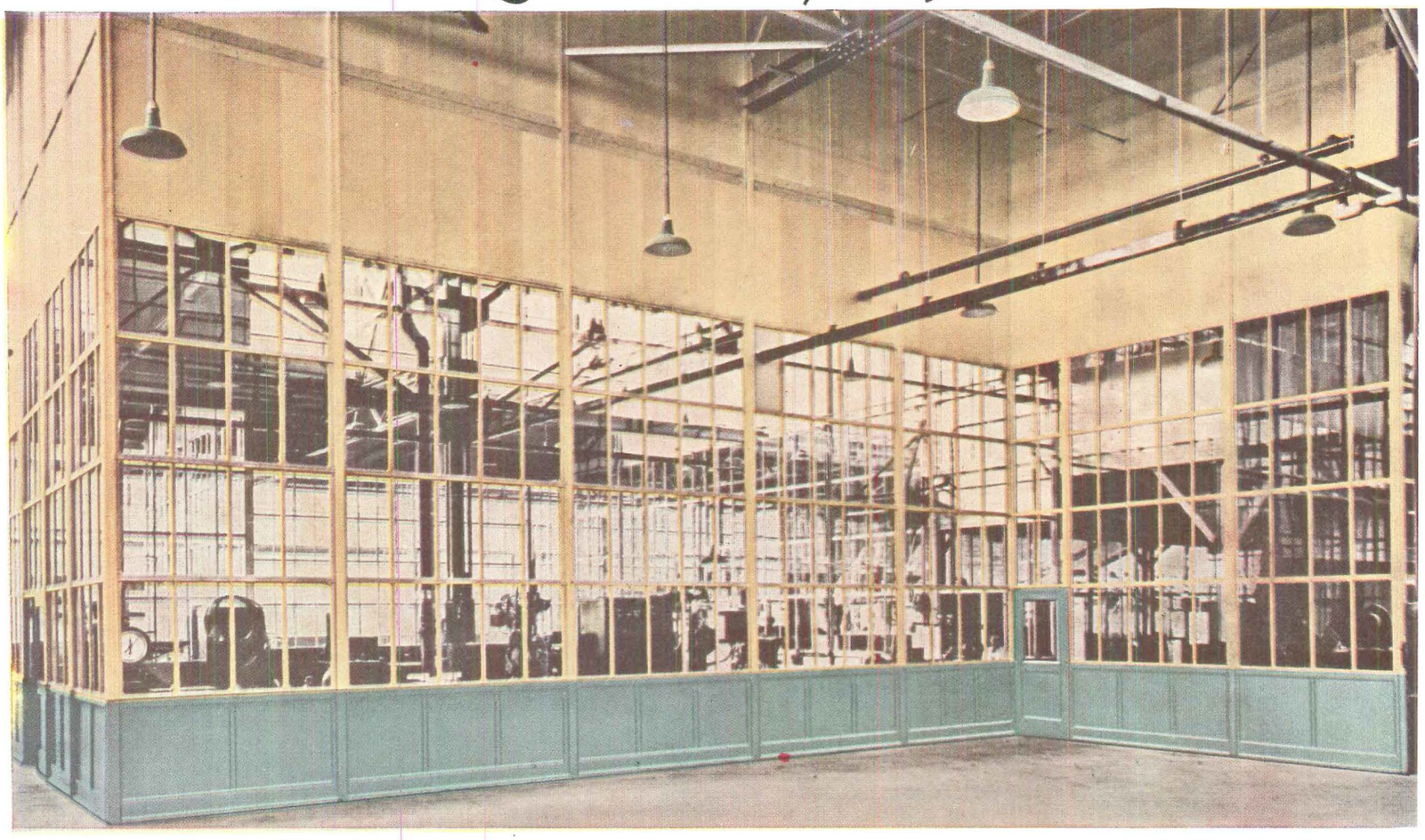
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costs him 0.7% on VA loans.) Historically, lenders insist that government insured mortgages net them 1% more than government bonds, demand 2% more for conventional mortgages with their higher risk. So, risk considered, there will now be more profit in other investments, as follows:

	% Return to lenders after servicing		
	Feb. 8, '51	Mar. 21, '51	What lenders may demand
Long term govt. bonds.	2.45*	2.80	2.80
Triple A corporates..	2.65	2.81†	—
VA mortgages	3.5	3.5	3.75
FHA mortgages	3.75	3.75	3.80
Conventional mortgages	4.0	4.0	??

* Adjusted to reflect over- or under-par market price. † Some higher.

Across the nation, the first returns indicated Bill Clarke was exactly right. In Detroit, insurance firms joined banks and savings and loan associations in declaring disinterest in VA loans. In Utah, a bank held up approval of a $500,000 FHA Title II commitment for fear its New York correspondent wouldn't be interested. Conservative financiers were having an inning, at last.

DEFENSE HOUSING BILL, trimmed to essentials, receives Senate blessing

As cobwebs grew over Congress' sense of urgency, the defense housing bill moved toward enactment slowly. First, a coalition of southern Democrats and Republicans in the House, fearful the Administration version was so loosely drawn it put no brake on bureaucrats' schemes, overwhelmingly rejected a motion to bring the measure to a vote. The Senate then did what many thought the Administration should have done in the first place: trimmed the bill down to essentials, passed it by a voice vote April 9.

Builders viewed the result as a mixed blessing. The upper house version still would let Uncle Sam build homes where private enterprise could not. But the Senate proposed limits on Federal spending:

For Government-built housing..	$50 million
For Community facility aid....	$60 million
To buy land around areas like H-bomb plants (to avert speculation)	$10 million
Loans to prefabricators.....	$15 million

To guarantee private builders first crack at defense housing, the Senate wrote a definite order of precedence: 1) Relax Regulation X. 2) Invoke the new Title IX. 3) After 60 days, HHFA public housing.

Most controversial was an amendment to Title IX intended to prevent developers from borrowing more than projects cost, as happened under 608 in World War II. Loans would be held to 90% of actual physical improvement cost, excluding contractors' profits, land cost, off-site utilities and rebates. At best this would be a nuisance. Some thought it would block private rental housing in defense areas. Few would tie up 15% of a project's cost for the 5 years they would be required to rent it.

To the industry's discomfiture, the economy ax also fell on FHA. Cutting the bill's total program from $3 billion to $1½ billion, the Senate restricted the aid to defense areas. That meant FHA soon would be out of Title II money entirely—probably in 60 days. What would builders do for normal financing? Plans were hastily drawn for separate legislation to fill the FHA kitty. Odds were that the toned-down bill would squeak through the House. For industry opponents of the omnibus measure were leaning to the theory that they would have to take it as it stood or nothing.

NLRB RULING requires union shop vote in building trades. Significance: doubtful

For 16 years, the National Labor Relations Board had avoided elections among building trades workers: they shifted too quickly from job to job; besides, the burden would swamp the agency. Last month, the board reversed its course. It directed an election among 22 Baltimore firms to see if their employees want the AFL Plumbers & Steam Fitters Union to represent them. In Olean, N. Y., it ordered a union-shop poll among plumbers in five firms. The board's reasoning: since it was insisting that unions give up unfair practices defined by the Taft-Hartley Act, it was therefore unfair to deny unions opportunity to win certification.

At first glance, the order seemed to promise far-reaching consequences: a flood of demands for certification elections, perhaps breakdown of the National Joint Board for settling the jurisdictional disputes which always have plagued the industry. After a closer look, both industry and labor groups felt somewhat reassured. The board was careful not to be too specific about the nature of work to be performed. NLRB also swore its new policy need not undermine the Joint Board. Maybe the boat hadn't been seriously rocked, after all.

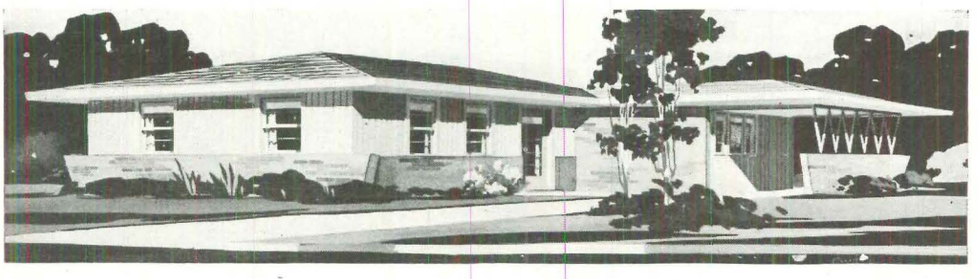
INVESTIGATION OF FHA may result from complaints of influence, favoritism and old-maidish administration

Alarmed at the extent to which influence peddlers and political termites had bored into the RFC, investigation-minded senators began to think of turning their flit-guns on other Government lending and credit agencies. No formal proposals were being voiced yet. But some legislators had their eyes on FHA. Indiana's Homer Capehart openly suggested it would be a good thing to see how the mortgage program was ticking. As ranking Republican member of the Senate Banking & Currency committee, which scrutinizes all federal lending and finance, he is in a spot to make his views count.

Neither Capehart nor his colleagues* claim to know of major corruption in FHA. In fact, the agency has cracked down on gift-takers in the past, without outside prodding. So far, it has been popular enough on Capitol Hill to escape Congressional inquiry.

(Continued on page 20)

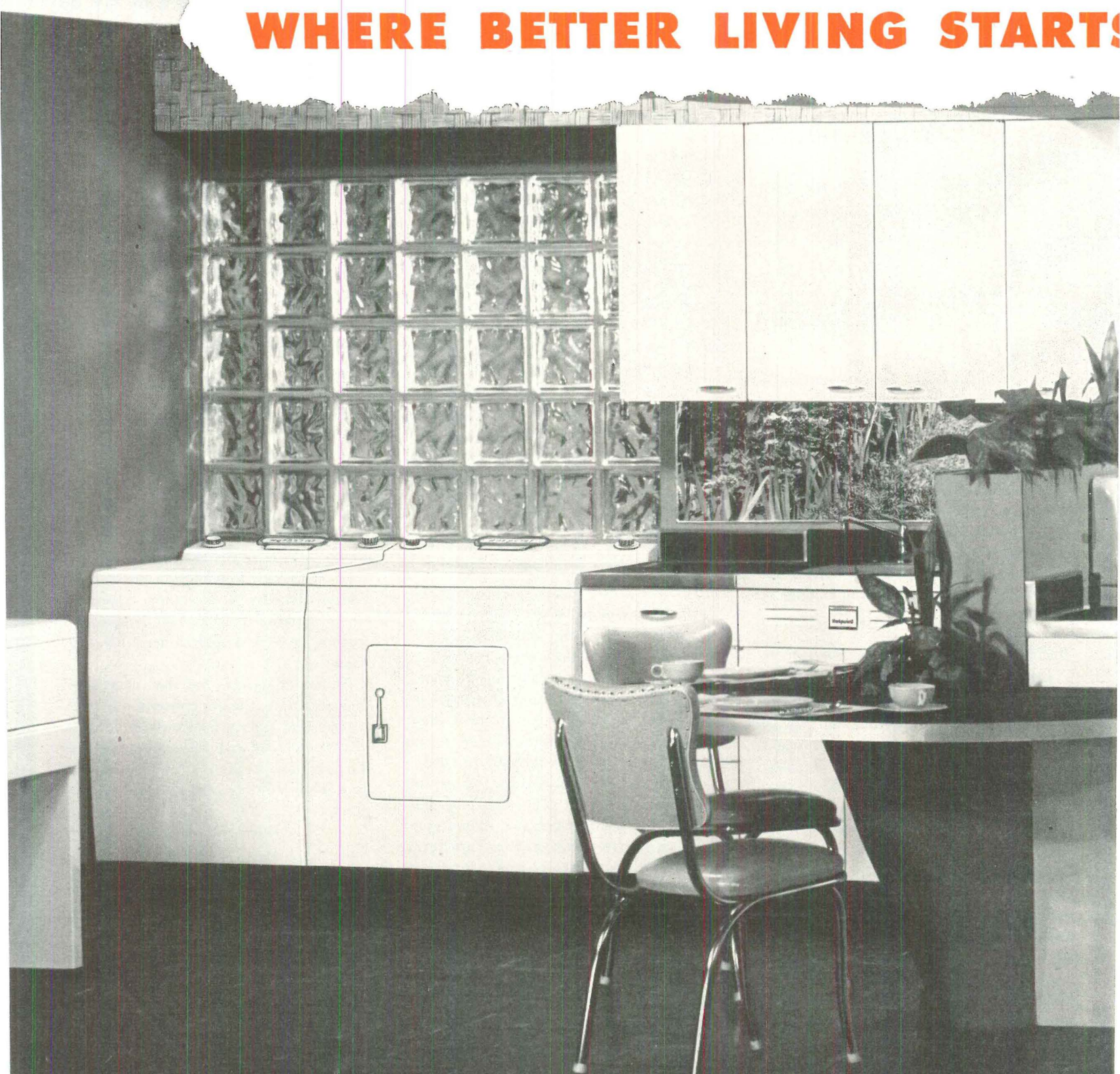
* Sen. Burnet Maybank, committee chairman, recalled that rents on some 608 projects had been allowed to climb above levels FHA set. Economy-minded Sen. Harry Byrd wondered aloud whether FHA (and other Government lending agencies) were still necessary at all.



STATE DEPARTMENT EXPORTS PREFAB HOMES as experiment in overseas housing

The State Department began exporting a fresh slice of the American way of life this month. From New Orleans, this prefabricated house sailed for Monrovia, Liberia, tucked into 42 crates aboard the SS Del Sol. It was the first of 52 tropic-design homes going to diplomatic, consular and Voice of America people in Jidda, Saigon, Djakarta, Teheran, Karachi, Madras, and Rangoon. Crawford Corp. of Baton Rouge, La. sold the Government this 3-bedroom, 1,050 sq. ft. model for $7,000 each, gets $10,800 for a nearly identical model at home. The department undertook the experiment to see if exporting U.S. homes will house its overseas corps cheaper than local construction. State officials weren't stressing it, but with electric kitchens, attic fans, central heat, the homes could provide good propaganda for U.S. living.

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But now there were squawks about:

- Instances of gifts like television sets to field office workers from developers seeking special consideration.
- Occasional favoritism—alleged—in handling job applications under the defunct 608 program.
- Occasional political influence, such as during Roosevelt's administration when it was charged that a loan for a sumptuous Negro rental project outside Washington was approved only because of strong White House pressure.
- The agency's old-maidish approach to new building methods and design (see next column and *Editorial* p. 101).

FHA's most ardent opponents are odd bed-fellows. Ultra-conservative financiers dislike the fact that FHA ended the big down payments on mortgages they regard as good business. Left wing labor crusaders want FHA to force builders to pay prevailing union rates as a backdoor method of compelling unionization. (This requirement now applies only to multi-family jobs.) Labor would also like to write no-racial-discrimination into the law.

COMMERCIAL BUILDING moves apace under lenient interpretation of government ban

Commercial builders and the NPA were having a blissful honeymoon. With M-4 licensing of commercial construction a month and a half old, reports from Boston to Los Angeles struck much the same note: unconcern. Said Detroit Contractor Harold Butler:

"After all, we're right back where we were ten years ago. Those of us who have been through it are not worried. I'm sure the system will work out fine."

The system, which was imposed after a month's freeze on all commercial building, forbids new construction costing over $5,000 for amusement, recreation or entertainment. It requires specific approval for nearly all other types of commercial structures costing over $5,000.

Biggest reason for the love-and-kisses act was that NPA was rejecting only a tiny fraction of builders' pleas for a go-ahead. Most of the turndowns (76 out of 669 requests received by all field offices between Feb. 15 and Mar. 1) involved filling stations, mortuaries, garages. In Boston, a $1,700,000 addition to Filene's department store and a $1,900,000 gym and swimming pool for Rhode Island State College won quick approval. In Dallas, NPA caught one

(Continued on page 25)

DOES FHA DISCOURAGE BETTER HOUSING? A look at Los Angele

With the Federal Housing Administration coming under attack by many builders and architects who feel it has fallen behind the times in accepting modern design and construction economies (see Editorial, p. 101), THE MAGAZINE OF BUILDING this month takes a closeup look at FHA's Los Angeles district office. It is one of 72 virtually autonomous kingdoms in the FHA empire, because FHA adheres to a policy of not overruling its local chief architects.

Controversy swirls around the graying head of Frederick S. Stott like confetti around a Broadway-paraded celebrity. As chief architect of the Federal Housing Administration's Los Angeles district office, he has the authoritative local word over whether design of a house meets FHA standards and is thus eligible for FHA financing. Southern California has a climate ideal for semi-outdoor living. Many architects are trying to adapt housing to that environment with modern design. But Fred Stott, both his defenders and detractors agree, is a high-button-shoe ultra conservative with a perfectionist's eye for detail.

Complain architects who have had their temperament and lifeblood ideas trampled on: "It's no secret that a 1925 model house can get a higher evaluation in Los Angeles than a modern house, no matter how practical it is. True, FHA okays commitments on contemporary jobs, but with an evaluation too low to be of any use, or else with so many recommendations for changes the builder throws up his hands in despair."

Irate builders cry: "They judge a house's value too much by intangibles, and the intangibles are all lopsided with moss-back thinking. And it takes months to get any action."

Graphic House, Inc.



Fred Stott

On the other hand, there are plenty of builders making a lucrative living in home-hungry Los Angeles who defend FHA. Says Hugh Gibbs, big Long Beach builder who has been dealing with FHA for seven years: "Architects collectively have failed to take FHA seriously. It depends on the approach of the architect; he must sit there and battle it out to get results. Architects should examine themselves on how they first approached FHA; they would probably do it differently if they had to do it over again." Others say: "Those FHA guys are trying to do a job. They work hard and there's no evidence of corruption beyond being able to get a point across through a drink or two. After which it is still likely to be turned down later." Or: "Those guys in FHA are underpaid, and Stott's only doing his duty protecting FHA, which after all has a stake as an insuring agency."

Sincerity in a turtle shell

The impervious object of this verbal fury is a tall, spare and pallid civil servant, who watches over the proceedings of his office through a pair of steel-rimmed glasses. He brought his conservatism with him from the Midwest where he was born 61 years ago (St. Paul), and worked as a practicing architect (Omaha) until 1937 when he became an examiner in the office he now heads. A year later, he became senior architect of the Rental Housing Division of FHA's Zone Five in San Francisco. He returned to FHA's Los Angeles office in 1941 as architectural examiner, has been chief architect since 1946. To an inquirer last month Stott deprecated the importance of his own construction and design ideas. "We have only one duty: to follow what Washington wants," he explained.

What Washington wants often takes too long to become clear to FHA in Los Angeles, exasperated builders assert. In 1949, when the cry arose in Congress for more low cost housing, L.A. builders tried to develop an economy house program. Stott, however, pointed to FHA's Bible, the Minimum Property Requirements book. Months of meetings and exchanges of letters to the Capital ensued. Finally, Stott was overruled. Builders got the green light to omit a variety of items in garage floors, subfloors and slab floors. It turned out, however, that FHA decreased the evaluation by at least $500 when $300 worth of items were omitted, builders report.

When the VA 501 program came along, with no down payment, veterans took to more expensive houses rather than the economy house. VA first worked with FHA, using the Minimum Property Requirements. Soon, the veterans agency cut loose —frankly fed up with what its officials said were the "endless additions which Stott wanted to superimpose on each house." (VA eventually captured a far greater proportion of Government insured housing in the Los Angeles area than in other parts of the country.)

A more tangible demonstration of the additions, which some builders wryly cal

eveals that FHA's dictates are more conservative than contemporary, more criticized than condoned

the "unprinted requirements," was provided recently by Fritz Burns of Kaiser Community Homes. He built an apartment house conforming to everything Stott suggested. One-bedroom units had to rent for $67.50. Nearby in the San Fernando Valley, Burns erected a similar apartment, conforming merely to city and county building codes (which even FHA brass concede are stiffer than their own requirements for a few items). One-bedroom units rent for $50. Comments Dave Slipher, Burns' technical director: "FHA now constitutes an amalgam of different guys' ideas on how houses can be made better, therefore it no longer represents a minimum standard."

Rigid specifications

Two other complaints often crop up.

1—FHA's valuations do not reflect the difference between good and shoddy equipment. Hence a builder, already downgraded on evaluation of replacement cost, is tempted to make up the difference by putting in a heater with a one-year guarantee rather than one with two to ten years.

2—The agency makes no allowances for varying construction conditions within the area. For instance, 2″ of decomposed granite is required under an asphalt driveway. Designers agree this is fine in the heavy, poorly drained "cattail" land of Long Beach. But in the sandy loam of the San Fernando Valley it is a waste.

Perhaps the most striking example of the agency's attitude toward the contemporary house was its treatment of the Jones-Hvistendahl house, which won AIA's 1950 Honor Award, *House Beautiful's* kudos as the "First House of the Year," and THE MAGAZINE OF BUILDING'S recognition as "Builder House of the Year" (Dec. '50, p. 78).

The two-bedroom, 1,000 sq. ft. house, selling for $10,500, was approved by FHA's San Diego office for an $8,500 commitment after a few minor changes. Four were actually built there with FHA mortgages. Architect A. Quincy Jones later submitted the house to Stott's office, expecting approval for FHA financing in Los Angeles. Stott replied, "The plans are not acceptable in their present form," listing 46 detailed objections, among them these which several architectural experts have called "ridiculous:"

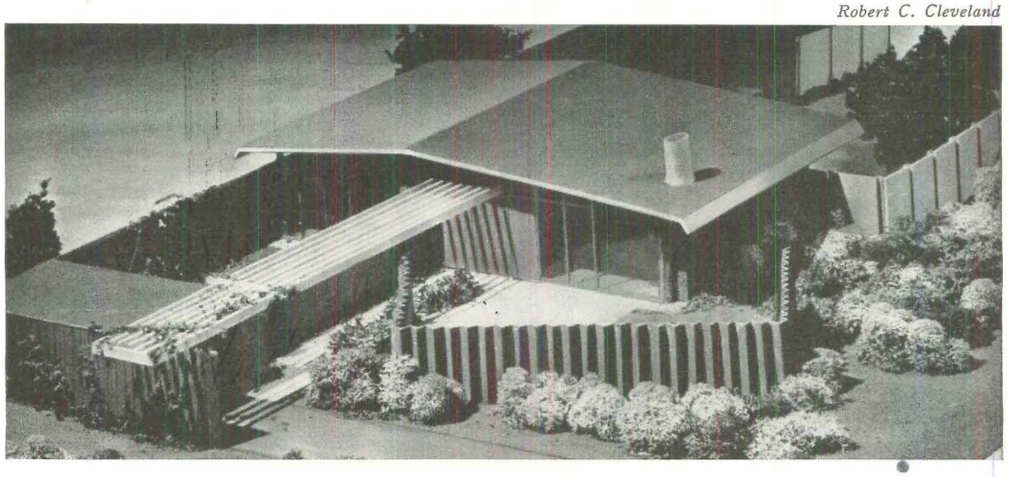
The living room, although it met FHA specifications, would have to be larger. Instead of asphalted concrete for a garage floor, Portland cement must be used. Of the roof, "crushed ceramic material if porous is probably not satisfactory because of its tendency to absorb oils from the roofing." The plans didn't specify doorbells. The eave-covering planks, because they sloped outward slightly, would get wet when it rained and become discolored. (Unless rain always came down exactly vertically, the planks would get wet whether they sloped out or not.)

Upshot was the Jones house was not resubmitted to FHA. So far, five have been built in the L.A. area, with other financing.

One of FHA's aims when it was organized was to encourage cooperative housing. Officials of the Mutual Housing Association, a cooperative in which prospective owners select a lot and one of 27 different designs of contemporary homes, submitted their project to Stott.

Each of the 27 house designs was considered separately. This required four months. He also required changes. Six inches would have to be added to the width of the garage. Asphalt for the carport (a potential saving of $75 over concrete) was disapproved. In house after house, Stott insisted the designers have doors swing his way, not theirs. Initially, he flatly refused to allow carports, although snow is all but unknown in Los Angeles and the annual rainfall is that of an arid belt. After much negotiating, he reluctantly permitted carports, provided they were built so that they could be later converted into closed garages. The four month stalemate resulted in substantial financial loss to the cooperative owners and contractors. Eventually, however, 80 houses were built.

Robert C. Cleveland



Design experts called the Jones-Hvistendahl house a clever package of modern amenities

'Laughed in my face'

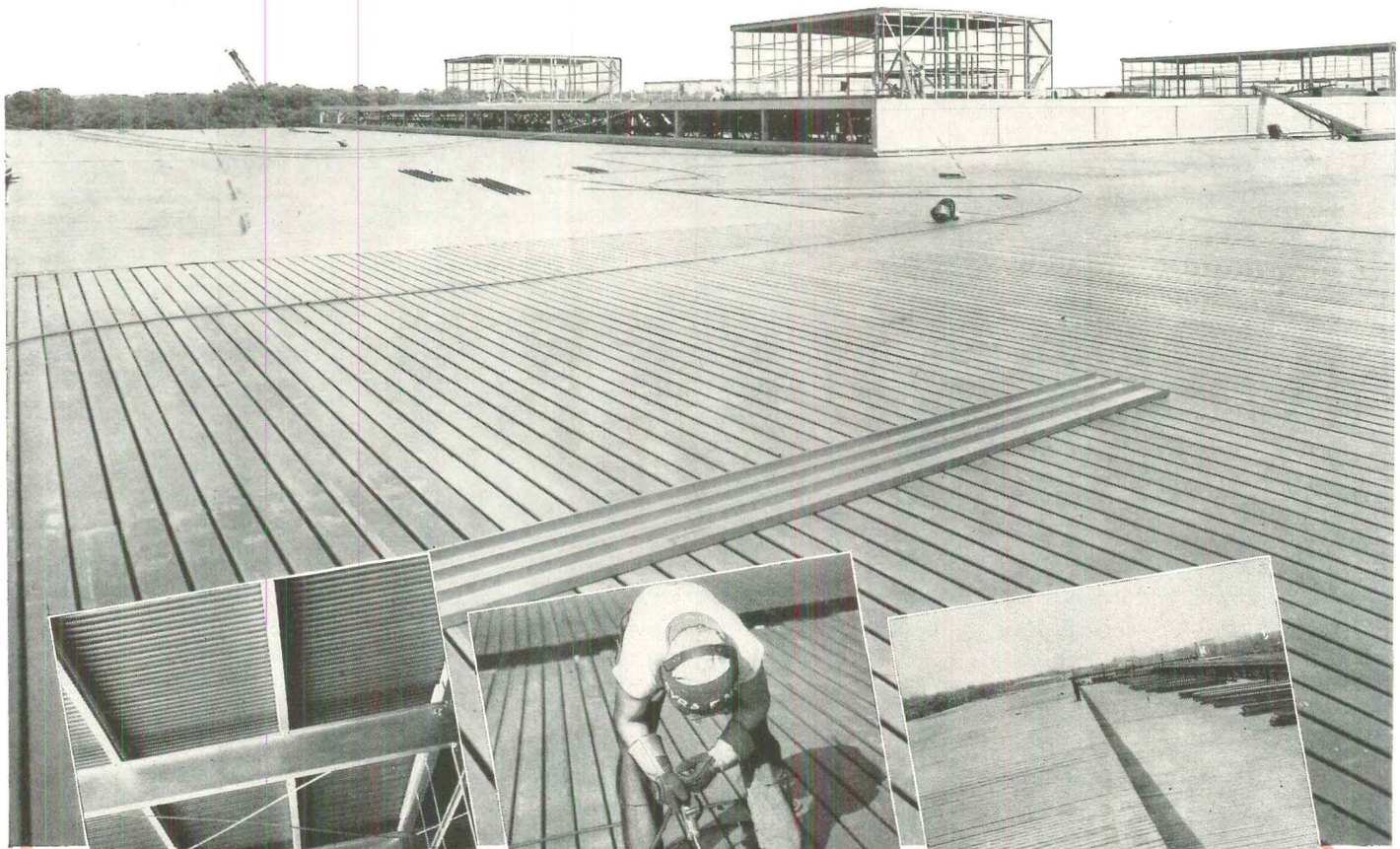
One progressive architect who normally doesn't deal with FHA tried to get a commitment on a house which he figured would be a popular model. His report:

"Because of my name, my house was ridiculed right to my face. Those men, frustrated architects themselves, like an example to laugh at occasionally. All they would say was 'It's unsalable.' When I asked how I should change it, I was told, 'I don't know, just redesign it.' When I followed certain suggestions, the man who had made the original criticisms (one of Stott's aides) hadn't remembered what he said, for nothing was put in writing. It was turned down again. Besides my lost time, it cost me over $150 in engineering fees, to say nothing of reblueprinting and $500 in extra construction work."

Architect Eugene Memler designed a new house whose basic unit was 3″ steel pipe set 8′ apart. Sure he would get nowhere with the Los Angeles office, he submitted the plans and specifications to FHA in Washington, seeking an engineering bulletin approving this type of construction. After a year, he got it. The green light came after Memler buttonholed Senators Bricker, Taft and Knowland, with whose backing he threatened FHA with a Congressional investigation. On the other hand, it took Memler only six weeks to get county approval in Los Angeles. The city's top building official approved the plans after a 30 minute look.

Sighs Memler: "FHA is reluctant to recognize any improvement over established design. They don't like to approve houses that are fun to live in, despite the fact that this is what people in California want." The philosophic view is exemplified by Architect Richard Neutra, who personally never experienced trouble with FHA, which adopted one of his homes as a standard. Says Neutra: "FHA has been instituted by democratic processes to serve the many. It must be kept from a calcification. . ."

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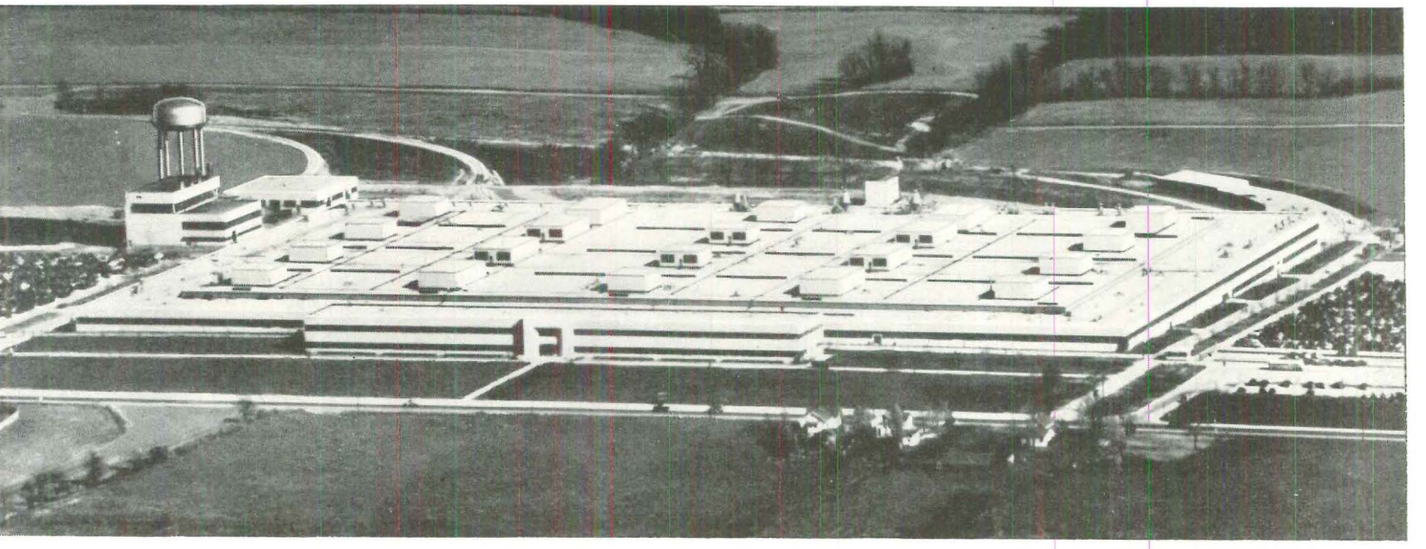
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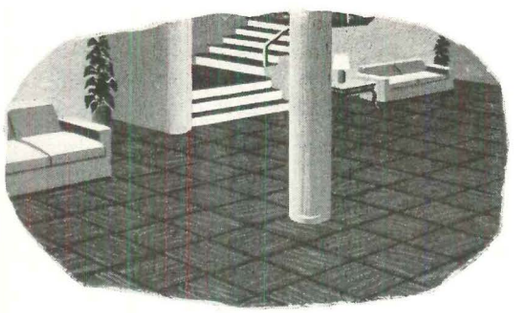
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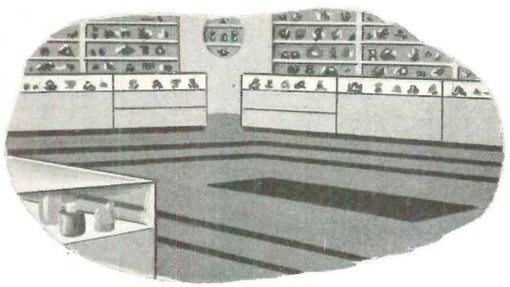
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bank with "very little done" on a $17,500,000 new 36-story building. Said a vice president: "We got our plans together, submitted details of work already done, listed our orders placed for materials, and sent them in with no comment, no plea and no attempt at pressure. The permit came right through."

Why the soft curbs? Explained NPA Regional Director George Payne in Chicago, whose office okayed 14 filling stations among 48 buildings on its first approved list: "Not to approve would have created an unnecessarily severe hardship for people who had gone ahead with plans without knowing the likelihood of restrictions."

Many contractors and builders doubted that NPA was ready to police the M-4 order if building owners and contractors wanted to ignore it. Boston NPA Chief Paul G. Carney admitted all he could do about a "doggone lot" of deliberate violations when the program started was to write admonishing letters. In Manhattan, the agency had one (1) enforcement man. Nobody was even talking about prosecutions.

President Robert Mathias of the Chicago National Bank thought "at this pace it will be summer before we feel the pinch in commercial building." Noting all the "anticipatory planning," he remarked: "It's like the fellow who filled up his bins before the hoarders started."

TAX LOOPHOLES: realtors would open one for homeowners, bankers would close one on savings & loans

It was the season for closing loopholes in the tax laws. The tax-writing House Ways & Means Committee was plodding about the business of raising the money to finance rearmament. So it was all the more surprising that a proposal to create a new loophole in capital gains income tax was receiving serious study.

Testifying before the committee, NAREB's Calvin K. Snyder, secretary of the Realtors' Washington Committee, pointed to the plight of the worker forced to sell his home, move to a new defense job, then buy another house. Said Snyder: "If my old home has increased in value over the original purchase price (because of inflation), this increase will be taxed as gain, yet at the same time I am required to pay a comparable price for my new home. Yet neither is worth any more nor any less than the other."

The NAREB plan: waive capital gains tax (now 25%, although the treasury wants 37½%) on sale or exchange of a residence if the taxpayer buys another home within 12 months. To foil speculators, sellers would be required to have actually lived in the house.

Another loophole undergoing close scrutiny was that used by the savings and loan associations. They are exempt from Federal income tax on the ground they are mutual ownership organizations. Rival banking groups and some legislators regard this claim with a fishy eye. Spokesmen for commercial banks, which pay income tax, denounced savings and loan exemption as "a perversion of the nonprofit philosophy" before the Ways & Means Committee. They claimed savings and loans, with $14 billion assets, are "big business."

Forewarned and ready, the U. S. Savings & Loan League fired right back with the argument that savings and loans add more than their share to Federal revenue through taxable income distributed to their members. The league's figures:

Federal Income Tax paid by commercial banks, depositors and stockholders, per $1,000 deposits.....	$3.30
Federal Income Tax paid by savings and loan banks through their member-depositors, per $1,000 deposits..	$5.00

Apparently, savings and loaners thus talked themselves out of danger again. How long the reprieve would last depended on how hard Congress tried to raise taxes.

RENT RECONTROL and extension to commercial space face balky Congress

The Administration had talked Congress into extending rent control 90 days (through June 30) in 1,300 towns which had taken no action to continue it themselves. Now the stage is set for the real fight: over federal planners' proposal for new curbs, broader than any in the last war.

The new rent bill, cooked up by Housing

(Continued on page 29)

MORTGAGE TERMS FOR DEFENSE AREAS require less cash from house buyers, more red tape for builders who must deal with a new bevy of officials

Relaxation of Regulation X and related FHA and VA mortgage loan curbs for the H-bomb areas at Paducah, Ky., and the Savannah River, S. C., apparently set a pattern for the defense housing program.

The details (see tables) were unveiled at mid-month by the HHFA and Federal Reserve Board. They didn't make builders happy. The relaxation was too cautious, somewhat inconsistent, and wrapped in red tape, they thought.

For multi-family projects, applicants in defense areas could now obtain the full loan ratio permitted under FHA's Title 207 (85% for the average job). But for a man buying a $9,000 house, the down payment fell only from $1,900 under Regulation X to $1,400 under the new order.

Veterans got their traditional break. The $9,000 house would require only a $500 down payment, for instance, under VA terms. But there was no difference from Regulation X at all for homes below $6,000.

What griped industry onlookers even more was establishment of a fresh bureaucracy of HHFA representatives (duplicating field FHA offices) to set quotas for rental and sales housing in each area. Until these functionaires acted, would-be builders would have to wait or take a chance. After that, rental builders would still need HHFA approval of each project, on top of other Federal restrictions. The agency would require rents geared to workers' incomes. To builders of homes for sale, HHFA offered a different deal. Certificates of approval to buy under relaxed terms would go direct to atom-workers. Poker-faced, HHFA suggested builders could either await their arrival before commencing construction, or else build and then look for buyers.

On top of that, the HHFA relaxation provided less liberal terms than would be available under the administration's version of Title IX of the proposed Defense Housing Bill. And only a few spots seemed likely to be named defense housing areas at all.

One Washington builder cracked: "If all Administrator Foley can do is toss the life preserver half way, it won't help much."

COMPARATIVE MAXIMUM MORTGAGE AMOUNTS FOR SINGLE-FAMILY HOUSES

		NON-VETERANS			VETERANS	
Transaction Price	FHA Section 203 (Pre Regulation X)	Regulation X	Regulation X (Defense Areas)	Proposed FHA Section 903	Regulation X	Regulation X (Defense Areas)
$5,000	$4,750	$4,500	$4,500	$4,500	$4,750	$4,750
6,000	5,700	5,150	5,400	5,400	5,750	5,750
7,000	6,650	5,800	6,300	6,300	6,500	6,675
8,000	7,350	6,450	6,950	7,200	7,250	7,600
9,000	8,050	7,100	7,600	8,100	8,000	8,500
10,000	8,750	7,700	8,250	9,000*	8,700	9,250
11,000	9,450	8,300	8,900	....	9,400	10,000
12,000	9,600	8,900	9,450	....	10,100	10,650
13,000	10,400	9,500	10,000	* Proposed	10,550	11,050
14,000	11,200	10,100	10,550	for high-cost	11,000	11,450
15,000	12,000	10,700	11,100	areas only.	11,450	11,850

The modern approach to traffic problems

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Photo courtesy of Hartford Medical Building

Stanley Magic Doors make any building more efficient

Completely automatic—requiring no hands to open—Stanley Magic Doors provide the best answer to your traffic problems—make any building more efficient.

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Proved practical and trouble-free by years of service in thousands of buildings, Stanley Magic Door operators are easily adaptable to almost any requirement of space and location, and can be installed on your present doors. Send this coupon for full information.

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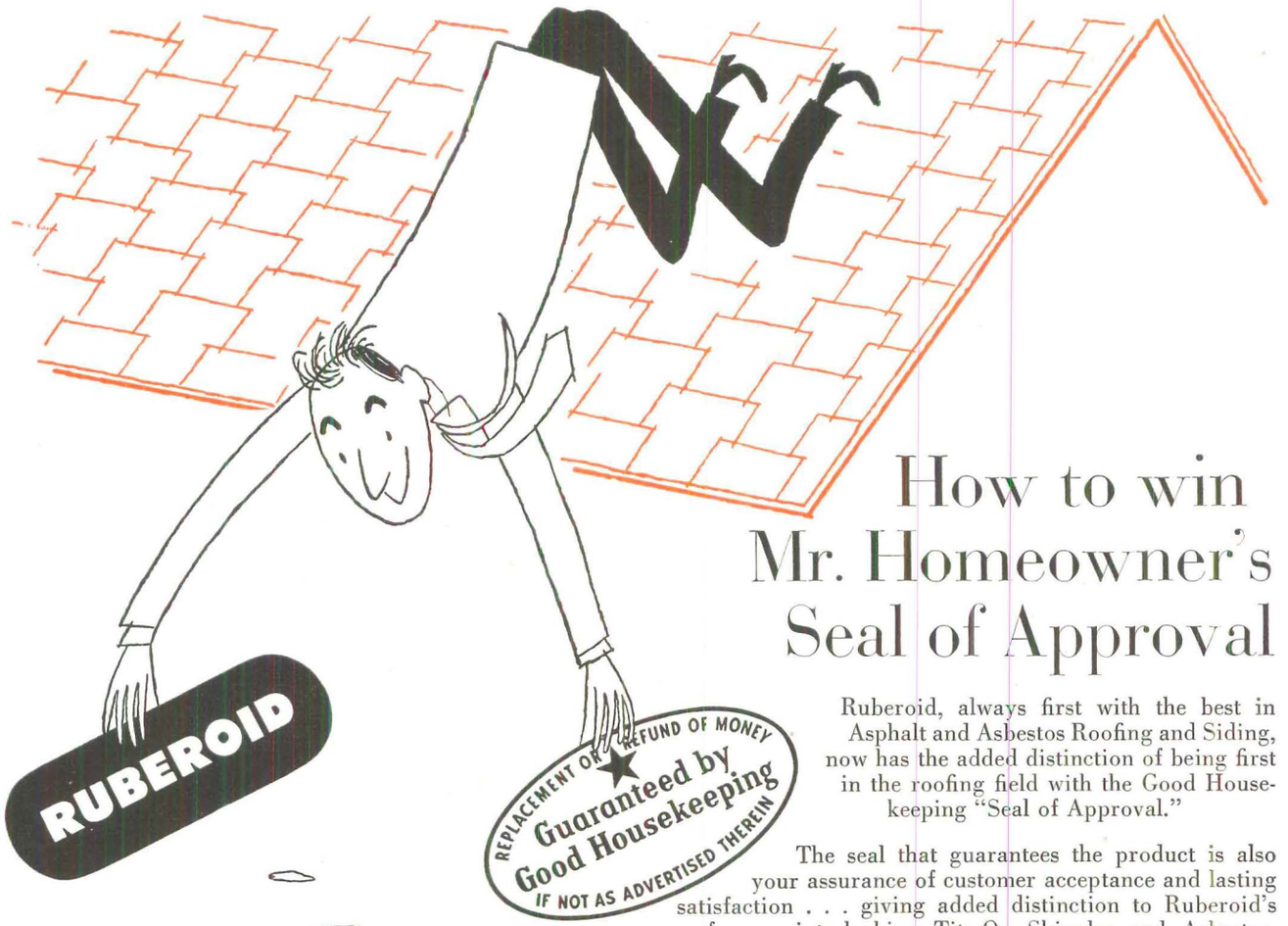
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Ruberoid, always first with the best in Asphalt and Asbestos Roofing and Siding, now has the added distinction of being first in the roofing field with the Good Housekeeping "Seal of Approval."

The seal that guarantees the product is also your assurance of customer acceptance and lasting satisfaction . . . giving added distinction to Ruberoid's famous interlocking Tite-On Shingles and Asbestos-Cement Siding.

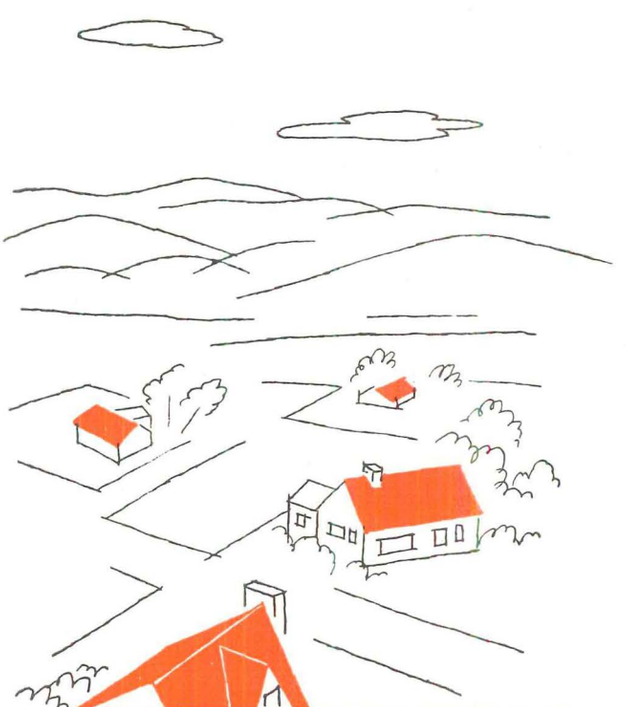
Ruberoid Tite-Ons are famous for their wind-defying, fire-resistant, long-lasting qualities. Their basket-weave beauty and attractive blend of colors give any house added sales appeal.

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MORE YEARS FOR YOUR DOLLAR WITH RUBEROID BUILDING MATERIALS

MEMO TO

The Busy Architect with a thousand thing's on his mind!

here's REAL help

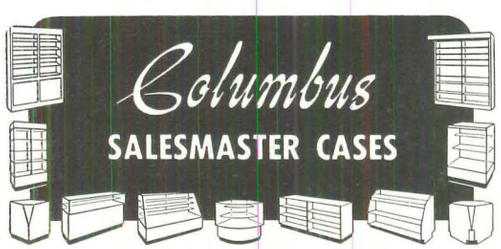
When you are called upon to design a retail store a thousand problems are created. One of them is store fixtures. The purpose of this advertisement is to show that you can delegate much of this problem, in complete safety, to specialists who keep your interests . . . and those of your client . . . paramount.

The Columbus Show Case Company manufactures a complete line of floor and wall display cases, counters, merchandising units, open and closed, special purpose and feature display units. They are in profitable use in every type of retail operation. Because each fixture can be used in a variety of combinations each store takes on a custom created appearance. Because the cases are mass-produced, your clients save important money.

For many years we have worked hand-in-glove with leading architects. It has proved to be a pleasant and mutually beneficial arrangement. We suggest you investigate.

COLUMBUS CASES ARE FAMOUS FOR . . .

- Custom built appearance from standardized units
- Select cabinet woods in a variety of finishes
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- Fluorescent illumination
- Mass produced price
- Low installation cost



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SEND FOR PORTFOLIO OF PROFITABLE IDEAS . . .
This portfolio is available ONLY TO ARCHITECTS. It can make your job easier. Write, wire or 'phone for it today.



Columbus Cases in the retail bakery



Columbus Cases in the drug store



Columbus Cases in the department store

Expediter Tighe Woods and approved by Economic Mobilizer Charles Wilson would permit recontrol of all decontrolled areas, including buildings built since 1947, now exempt by law. It would—to the dismay of real estate men—cover nonfarm commercial buildings for the first time — office space, stores, warehouses, gas stations. It would end all local option features of the present law. (Under these, almost half the country is now exempt from rent lids.)

The only thing good about the rent program, as far as industry men were concerned, was that the Administration would have it made part of the new defense production act. (The old one expires June 30.) With consolidation, rents would not be singled out for separate treatment. Building owners could thus expect to be freed whenever controls ended for the rest of the nation's economy.

But Congress was obviously balky at continuing rent or other broad economic controls. A good bet seemed to be that the Administration faced an uphill battle to win any continued rent control powers at all, and would almost certainly lose on commercial rents.

ST. LOUIS CONFERENCE falls wide of target to reconcile public and private housers

In St. Louis' cavernous Hotel Jefferson, something resembling a cross section of U. S. building industry leaders sat down last month for a unique try at agreeing on what Uncle Sam should do about housing in the mobilization months ahead.

The session, titled the National Housing Policy Conference, was the brain-child of the city's realtor mayor, Joseph M. Darst, whose dedication to housing problems is one of the goads that prompted businessmen of St. Louis to invest $2 million in an urban redevelopment program (see p. 128).

The mayor was aiming at a lofty target: to get all factions in the housing field to adopt a single recommendation to Washington. In fact, Optimist Darst (who confided to reporters that the idea for the meeting struck him while talking to Harry Truman) even hoped the conference might start to heal the breach between pro- and anti-public housers.

Two days and a few frayed tempers later, it was apparent to participants that no such millennium had arrived. Main trouble was the lopsided attendance. While it included 125 officials of public housing authorities scattered from Vancouver, Wash., to Tampa, Fla., virtually the only big-name spokesmen on hand for private builders were Rodney M. Lockwood of Detroit, former NAHB president, and Long Island Builder William J. Levitt. Lockwood departed before the conferees got around to discussing resolutions. And Levitt confined his remarks to a blast at Congress for dallying over passage of the defense housing bill.*

Yet the delegates also included a scattering of bankers, real estate men, labor chiefs, editors, priests, Federal and state officials, an architect or two, and—most significant of all—the mayors of ten U. S. cities, including Seattle, Denver, Milwaukee, Pittsburgh and Los Angeles. (Los Angeles' busy Mayor Fletcher Bowron told reporters he came only because he was impressed by the roster of St. Louis industrialists on the conference executive board. He added, "Frankly, I envy St. Louis for having its business community so alert to the redevelopment need.")

Most speakers dwelt on the thing Bowron said was on his mind: "sounding the message that public housing is in danger of coming to a dismal halt (because) Congress has grown smug over a problem we in the cities are finding more and more worrisome."

Pittsburgh's Mayor David L. Lawrence won a big hand with the argument, based on experience with his city's two privately financed $100 million urban redevelopment projects, that low cost housing *must* go hand in hand with all slum removal. Otherwise, displaced slum dwellers have no place to move. That makes redevelopment politically impossible, he held.

To this, Lockwood retorted: "No slums could come into being if health and sanitation laws were enforced."

Besides unspectacular talks from HHF Administrator Ray Foley and Sen. John Sparkman, the conference heard a few pungent bits of advice from the floor. Samples:

St. Louis Contractor I. E. Milstone, referring to the fight over whether low cost housing should be public or private: "If we are each going to try to shove the other out because of our own particular selfish interest, we are going to get nowhere."

Philip M. Klutznick, Chicago builder and vice chairman of Illinois' State Housing Board: "If we don't stop squabbling among ourselves, home building, whether public or private, is going to wind up last on the priority list."

With a sizable segment of private building unrepresented, the conference delegates wound up in vociferous support of resolutions favoring the Truman defense housing program, as long as private enterprise gets a chance to do what it can where it can. Bitterest debate ended in defeat of an attempt by the Urban League and the National Association for the Advancement of Colored People to have the meeting endorse non-segregation in publicly-aided projects.

The conference also:

- Demanded that all defense housing be permanent construction, not the temporary eyesores that sprouted in World War II (see p. 122).
- Endorsed efforts to modernize building codes to reduce waste of materials.
- Urged more urban redevelopment under Title I of the 1949 Housing Act to reduce vulnerability of American cities to bombing.

*Levitt's argument: What if the bill wasn't perfect? Didn't legislators realize it would take six months from passage of a law until the first foundation for the first defense home could be laid? Good news from Korea has lulled Congress into a "fool's sense of security," he snapped.

PEOPLE

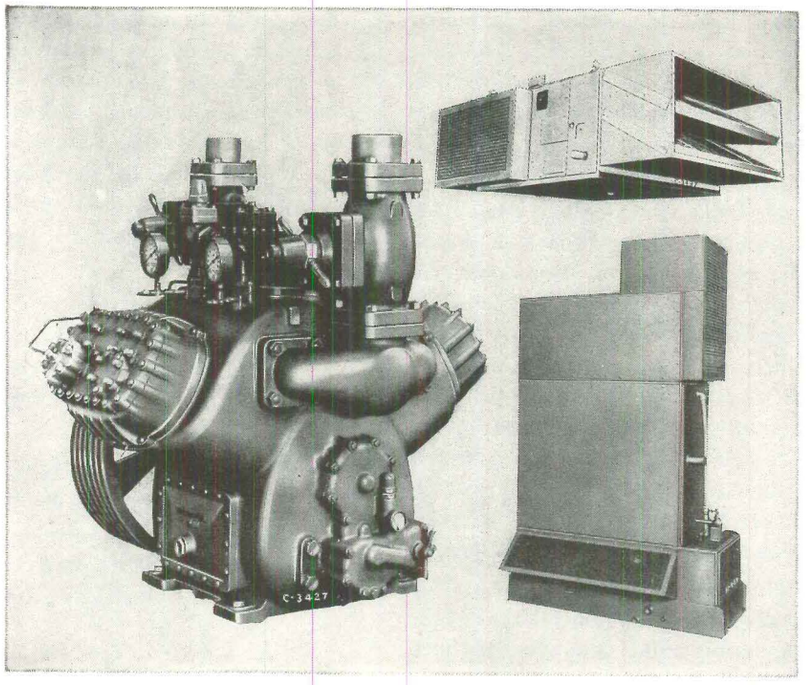
For its top honor, the title of "master architect," Alpha Rho Chi, undergraduate architectural social fraternity, last month tapped **John Wellborn Root,** whose big Chicago architectural firm of Holabird, Root & Burgee designed many of the skyscrapers that transformed the city's profile. He will be initiated May 11 at the Edgewater Beach Hotel during the AIA convention in Chicago. The title has been bestowed on only three other men: the late Eliel Saarinen; the late Cass Gilbert Sr., designer of New York City's Woolworth Building; and Dr. Nathan C. Ricker, founder of the University of Illinois architectural school.



Plump, silver-thatched **Rufe B. Newman Jr.,** 59, took over the chair vacated by able, affable James S. Follin when he quit in January as NPA director of construction controls. Since 1933, Newman has come up the intricate ladder of Federal bureaucracy from a post as an engineer examiner for the Public Works Administration in Tennessee. Most recently, he served as deputy commissioner for engineering and construction in Federal Works Agency's bureau of community facilities.



(Continued on page 32)



Who Makes a COMPLETE Freon Reciprocating System?

A completely integrated and balanced system—all *manufactured*, not just assembled, by the *one* manufacturer—that's Worthington.

No other company makes a wider variety of complete Freon reciprocating systems.

No other company offers more perfectly balanced operation of inter-related components—for lowest costs, longest life.

Worthington Freon-12 Compressors and Refrigeration Units. One basic compressor design covers a size range from 2 to 125 tons, with three cylinder sizes. Simplified construction. Lightweight automotive pistons. Worthington Feather* Valves—simplest, lightest, quietest ever made. Internal manifold. Renewable cylinder liners and leakproof, continually-cleanable force-feed lubrication in larger sizes. Positive manual or automatic capacity control. Available in self-contained compressor-condenser units.

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Worthington Evaporative Condensers. All parts exposed to moisture made of zinc-coated steel, bonderized and coated with rubber-base enamel containing special rust inhibitor. Prime surface—no fins to clog. Staggered coils permit air deflection and complete wetting. Six sizes from 2000 to 27,000 cfm.

Also: *Worthington Evaporative Coolers* in same range.

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Bulletins containing complete information are available

First Completely Air-Conditioned Apartment House in New England



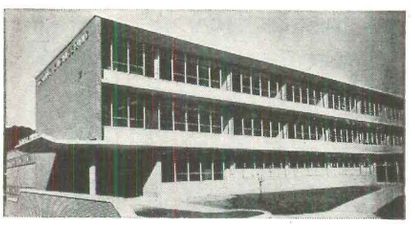
Beacon Towers Apartments, Brookline, Mass. is the first building of its type in New England to be 100% air-conditioned.

E. A. Berman Company of Boston, under the direction of M. L. Cail, installed a three-zone cooling water system for the 34 apartments. Individual room units are served by a refrigeration unit consisting of a Worthington Freon-12 compressor, evaporative condenser and water chiller.

The system is designed and operated for automatic heating in winter and cooling in summer.

Experience of the owners has been that the air conditioning helped to lease the apartments for 3-year periods.

Laboratory Air Conditioning Duplicates Mill Conditions



Worthington also manufactures a complete line of *centrifugal* refrigeration.

When the W. Harrison Hightower Textile Engineering Building was built at the Georgia Institute of Technology, Atlanta, to house its textile school, Worthington refrigeration for air conditioning was installed to provide the proper temperature and relative humidity required for textile processing.

Fourteen separate rooms are individually air-conditioned, through a chilled water system, from a 150-ton Worthington centrifugal refrigeration system, electrically-driven. This machine is equipped to shut off automatically in the event of trouble anywhere in the system.

Installed by Engineering Contractors, Atlanta, Ga.

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AIR CONDITIONING AND REFRIGERATION

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MORE WORTH WITH WORTHINGTON

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BRUSH-DAY-LITE





IN 1951...more than ever...
it pays to use America's leading

one-coat

Interior Maintenance Paint!

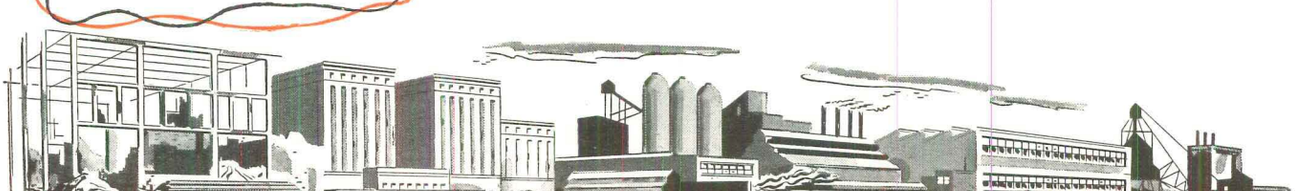
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to make your painting pay extra dividends at no extra cost

A service comprising detailed color suggestions tailor-made for you by trained consultants from Glidden Color Laboratories with over 21 years of experience. These comprehensive color harmony plans for interior painting based on Glidden's famous Sight Perfection Program pay important extra dividends! For complete information about this free service, write Dept. G-4.

The rearmament program demands heavy duty wall paints that cover in just one coat and give more years of service. Glidden SPRAY-DAY-LITE and BRUSH-DAY-LITE do both . . . saving you critical time, labor, material and money. Their high light reflection improves vision and eliminates eyestrain . . . reducing spoilage, promoting safety, building better employee relations. In non-fading white and 10 attractive colors.



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NEWS

MEMPHIS PLAN FOR PRIVATE SLUM CLEARANCE achieves $33 rents for Negroes with the aid of low cost land, 90 cent labor and defunct 608 financing. Application: limited

Most homebuilders think the ideal answer to public housing is private low rent housing. Usually, the hitch is that public low rent housing goes up on costly urban slum land where a private builder cannot afford to build and rent cheaply.

Is there a solution? The NAHB is sponsoring a clinic May 3-5 in Memphis for an on-the-spot study of what its chiefs think



Builders Wallace and Alma Johnson

is at least a promising hope. Most eyes will be on hulking, homespun Builder Wallace E. Johnson, whose Carver Homes have won wide attention as the Nation's first slum clearance project financed entirely with private capital. (THE MAGAZINE OF BUILDING, Sept. '50, p. 15).

Actually, as clinic-goers from throughout the country will discover, Johnson was confronted with only 20 tumbledown shanties on the 5-acre square block where he built his 88-unit Negro subdivision. He paid for flattening these with bulldozers by giving away the resulting scrap. Much of the land was actually vacant. So even after such extras as buying another lot for a woman who refused to sell and moving her shack free to the new site, Johnson's slum land and shanties, cost him only $391 per Carver unit. To this, all he had to add for site preparation was sidewalks (see cost breakdown). The city already had installed sewer mains. Streets were left unpaved.

Other reasons for Johnson's success:

1. *Cheap labor*—with an open shop (40% Negro labor), the Government-approved hourly wage rates on Carver Homes were: laborers, 90 cents; painters, $1.87; carpenters and concrete finishers, $1.90; electricians, $2.27; plumbers, $2.37½; bricklayers, $2.50; plasterers, $2.81.

COST BREAKDOWN—CARVER HOMES

Land	$33,400
Site preparation	3,154
Materials	226,331
Labor	102,750
Surveys	3,954
Permits	449
Contingencies and Overhead	4,186
Profit & mortgage cost	24,776
Total	$399,000

2. *Cost-cutting construction*—Johnson precuts 2 x 4's at sawmills he owns, cuts stair parts, inside door frames at his millshop, claims more than a wheelbarrow of waste per house is too much. Items like kitchen and linen cabinets, louvers, outside window and door frames are prefabricated. With simple design (concrete slab, asphalt tile floor, exterior brick veneer, shingle roofs) Johnson achieved a $5.77 cost per sq. ft., including land. The 88 units consist of 12 one-bedroom apartments of 672 sq. ft., renting for $33.50 a month, and 76 two-bedroom units of 798 sq. ft. renting for $41.

3. *Liberal finance*—Under FHA's now defunct 608 program, Johnson got a $399,000 mortgage from Equitable Life covering 100% of Carver Homes' total cost.

Thus the only broadly applicable "secret" in Johnson's low-rent housing scheme which visiting builders can take home with them is the well-known fact that simple design and shop fabrication save money.

Guidepost for Dixie

The Carver Homes project has, however, made important contributions:

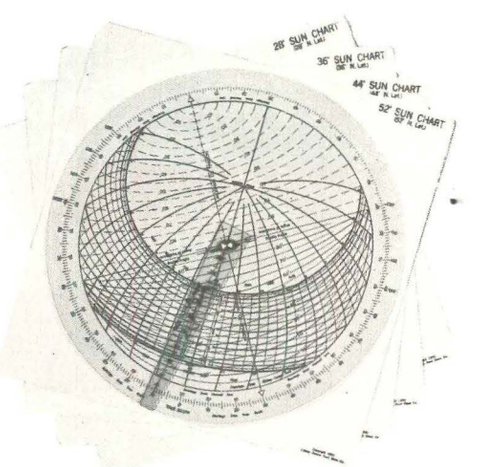
- It has showed how builders in the South can help end the region's No. 1 economic problem: the depressed status of the Negro.
- It has boosted Memphis' tax take. Whereas the Carver Homes block paid the city $94 a year in taxes as a slum, it now contributes $3,224.
- It has indirectly helped the slum dwellers. While none of the displaced slum families now live in Carver Homes, the project has taken in ten over-income public housing tenants who were replaced by slum dwellers.
- It has proved that low rent housing pays —Johnson nets 10% above his fixed mortgage charges and his 5% rental management costs.
- It has demonstrated that the Negro is a good rental risk. Of 500 Negro tenant families in Johnson's Carver Homes and other projects, only three owe back rent. (Among his 200 white tenants, seven are delinquent.)
- It has stimulated other Memphis builders to produce low rent Negro housing. However, none of Johnson's imitators has redeveloped slum land.
- Finally, Carver Homes has given Johnson the satisfaction of doing good and, unlike most do-gooders, without recourse to the public trough. Wallace Johnson (47) is a good builder in the broad sense of the word. He keeps a Bible on his desk and sometimes reads from the Scriptures to business acquaintances. Meetings of his supervisors end with prayer. He's a Kiwanian, deacon and chairman of the finance committee at Union Avenue Baptist Church, a director of Union University at Jackson, Tenn.; an active Boy Scout and YMCA worker. He and his wife, Alma, who is his business partner, organized their firm in 1939, when Johnson became convinced he could leave his $37.50 a week pay bracket in a lumber yard. His firm's motto is "builder of men and homes." Wallace Johnson is convinced he is doing both.

SUN CALCULATOR simplifies problem of proper window design

When plans for the United Nations' glass walled Manhattan home were on the drawing boards, it took two architects three months each to compute what effect the sun's rays would have on cooling and heating the 39-story structure.

Though designing lesser buildings involves less laborious computations, most architects can spend endless hours at chores like figuring the size of the perfect overhang, or how a slight change in orientation would affect the amount of sun coming through a window.

Last month, the research staff of Libbey-Owens-Ford Glass Co., Toledo, announced invention of a big time-saver. It was a circular slide rule dubbed a "Sun Angle Calculator." With a few pointers from the illustrated instruction book, architects could now merely twist a dial to reveal angular values for the sun's position as to true altitude, profile angle, bearing and angle of incidence. The calculator was calibrated for any latitude from 24° to 52° north and for windows and walls facing in any direction. At $9.50 each, the instrument would never return Libbey-Owens the research money that went into developing it. The company didn't care. It expected the calculator to pay off in good will.







AN ELEVATOR BUTTON YOU'LL NEVER PUSH

Passengers can't help being curious. Signaling for an elevator is no longer a push-the-button-and-wait routine. It's an exciting, even mystifying, experience with the Otis electronic *touch* button. Nothing moves. A mere *touch* of a finger excites an electronic tube behind the directional arrow. The tube lights. Registers the call. And a car arrives, *as if by magic!*

Otis electronic *touch* buttons, *in both new and modernized buildings,* dramatize another great advance in elevatoring by the Otis staff of design and research engineers that combines 2,017 years' experience of 75 key men with the exuberance of 125 younger men, to set the standards for the industry. This well integrated experience is available to everyone with a vertical transportation problem. However large —or small.

Add Otis *elevator* engineering to Otis *elevator* research, planning, manufacturing, construction and service and you have the reasons why the Otis trade-mark is the symbol of the world's finest elevatoring. **Otis Elevator Company, 260 11th Avenue, New York 1, New York.**

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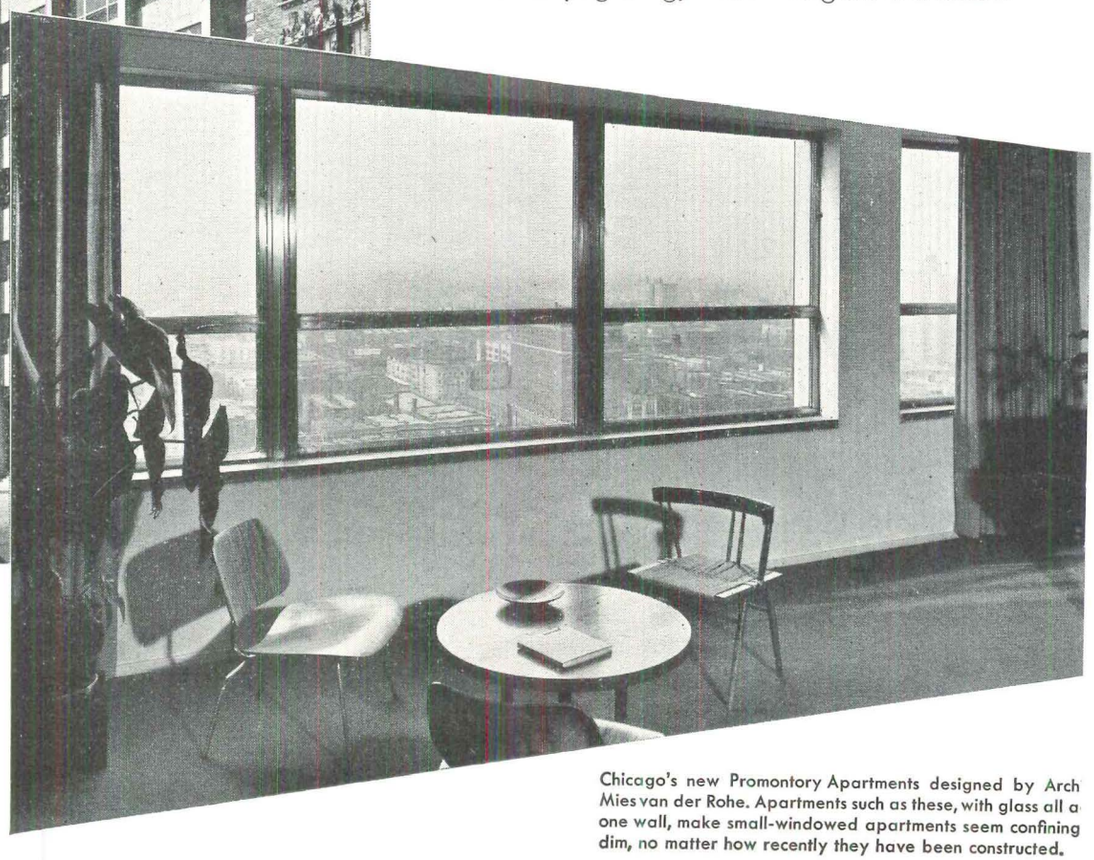
LIBERATION

or office workers

There's no "cooped-up feeling" in Chicago's new Promontory Apartments! One wall is wide open all across and practically to the ceiling. The architect used large windows to create a feeling of expansiveness. This principle is effective anywhere — schools, offices, hospitals, homes—but where better than to bring liberation to apartment dwellers!

As stated in Recommended Practices of Daylighting, clear flat glass transmits





Chicago's new Promontory Apartments designed by Arch Mies van der Rohe. Apartments such as these, with glass all a one wall, make small-windowed apartments seem confining dim, no matter how recently they have been constructed.

FOR "CLIFF DWELLERS"

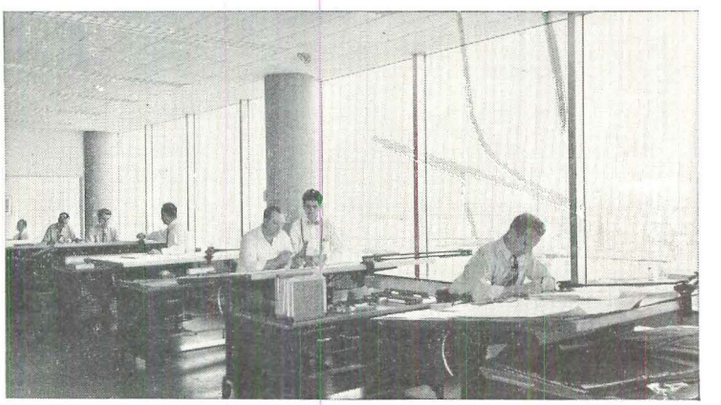
upils or patients

more light than glass in any other form. Furthermore, clear glass does not obscure vision. It is the combination of light and view that creates the pleasing illusion of spaciousness.

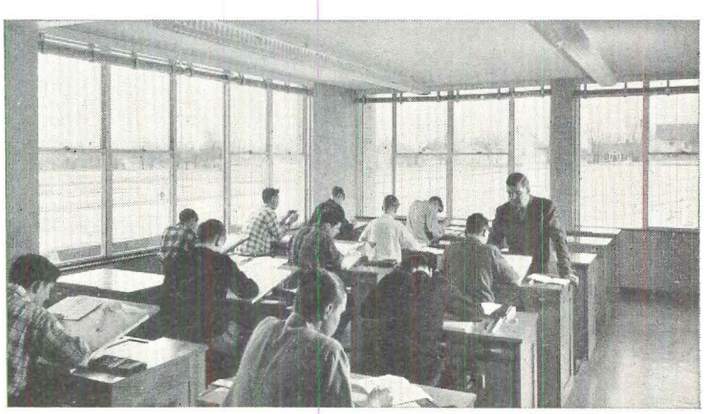
The most effective use of clear glass to make a room *feel* larger calls for windows wall to wall and from floor to ceiling. When the glass goes all the way up to the ceiling, a sense of unity between the sky and the ceiling is established.

Another reason for a Daylight Wall in apartments is the economy. Flat glass is a lightweight material that requires no interior finishing.

Of course, the other side of economy is salability—and people do go for sunshine and view. That's really the main reason for big windows in apartments or any other type of building. Libbey·Owens·Ford Glass Co., 4341 Nicholas Building, Toledo 3, Ohio.



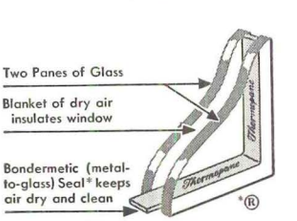
Architect Harris Armstrong has carried to its logical conclusion the principle of unobscured vision for spaciousness. In the new American Stove Company building, St. Louis, the ceiling meets the sky. The north side of the building is glazed with *Thermopane** insulating glass. This reduces drafts and permits furniture to be placed closer to the glass than if it were a single pane, consequently taking full advantage of overhead light and floor space near the window.



This could be another drafting room, or an office—actually, it is a classroom in Barrington (Ill.) Consolidated High School, designed by Perkins & Will of Chicago. Regardless of how a room is used, as long as people are in it, they enjoy the light, view and sense of spaciousness that is gained by having clear glass to the ceiling.

WHERE WINTERS ARE COLD,

*Thermopane** insulating glass is widely and successfully used. *Thermopane*, with ½" of dry air hermetically sealed between two panes, cuts heat loss 50% compared to single glass. This minimizes chilliness and drafts at windows. It also reduces the load on air conditioning equipment in summer. Write for *Thermopane* literature.



L O F GLASS

DAYLIGHT WALLS

THAT DON'T OBSCURE VISION

THERMOPANE • PLATE GLASS • WINDOW GLASS

Decorating trend!



English Oak Flexwood. Hotel Pierre Grill, New York City. Architect: Samuel A. Marx.

How FLEXWOOD SOLVES CURVED SURFACE *problems . . .*

More and more architects are utilizing the distinctive beauty of curved surfaces . . . Flexwood* makes it easy to have rich, selected woods on practically any curve. For Flexwood is *choice wood in flexible sheets.* It gives walls a genuine, long-lasting wood surface—easily, economically. No structural changes, no fire problems, and the first cost is the last. Note in photo how Flexwood enriches curved walls, round column, door area—for a beautifully unified result. SEND COUPON BELOW.

flexwood

CHOICE WOOD IN FLEXIBLE SHEETS

United States Plywood Corporation
55 West 44th Street, N. Y. 18, N. Y.
In Canada: Paul Collet & Co., Ltd., Montreal

Flexwood is manufactured and marketed jointly by United States Plywood Corporation and The Mengel Company.

*Reg. U. S. Pat. Off.

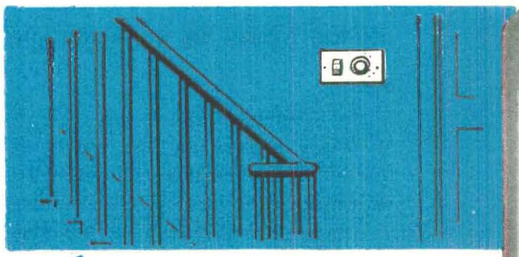
← *Prima Vera Flexwood.*

United States Plywood Corporation, Dept. W-6
55 West 44th Street, New York 18

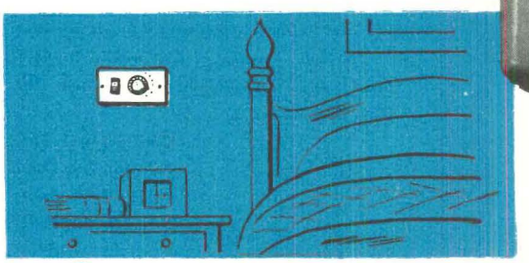
Please send me, without obligation, Flexwood's Case-History Book; shows how Flexwood helped solve 17 actual architectural problems.

NAME_____

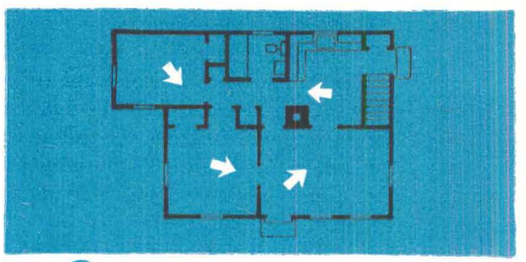
ADDRESS_____



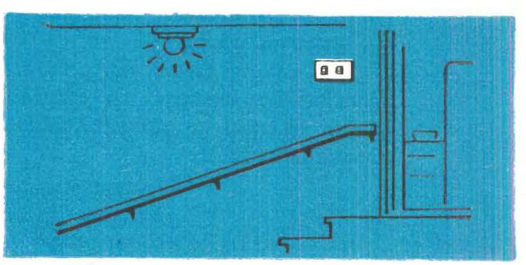
1 Master selector switch in front entrance hall can provide over-all control of lights and outlets.



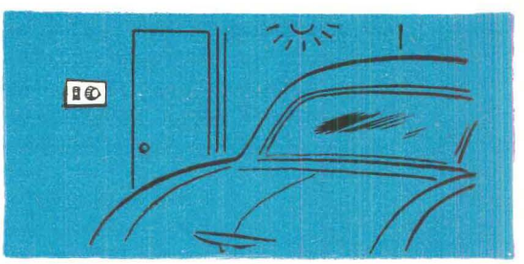
2 Master selector switch in master bedroom can be wired to control fans, coffee makers, and lights right from bedside.



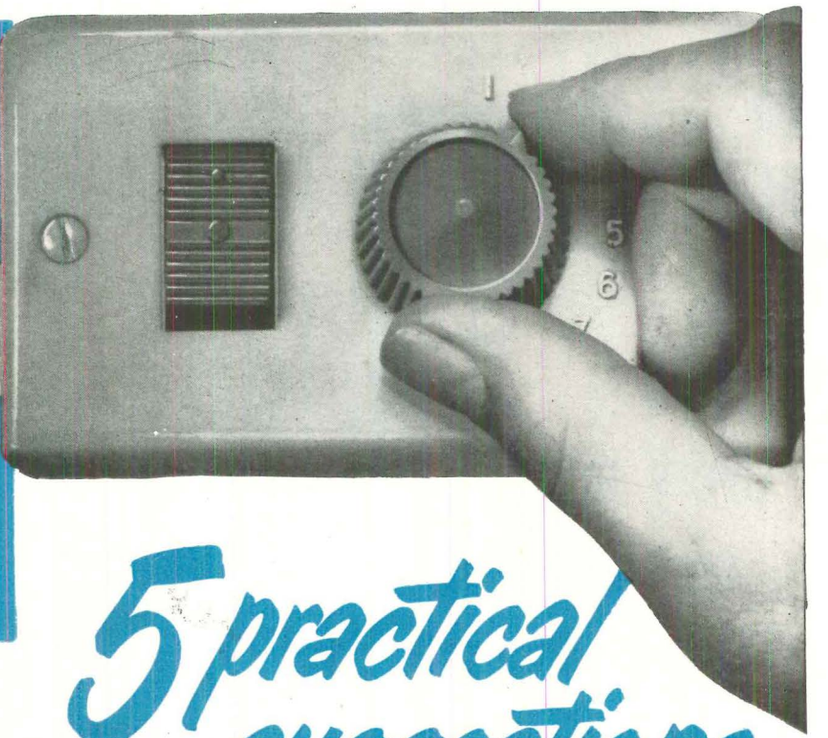
3 The pathway-of-light idea lets the home owner light his way through his house with G-E remote-control switches.



4 Remote control permits practical extension of the usual two-point control of cellar or attic light by providing a switch at the bedside for these often forgotten lights.



5 For outside lights, porch lights, breezeway lights, garage lights—remote control is a natural. Control them from entrance hall, rear door, and at the lights themselves.



5 practical suggestions

FOR ADDED FLEXIBILITY WITH G-E REMOTE-CONTROL WIRING

To make a completely flexible wiring system practical and economical, the General Electric remote-control wiring system now offers a centralized control of as many as nine different circuits.

Because it's new and different, it excites the home-planner's imagination. Because it's so practical, it offers you an entirely new concept of electrical control . . . convenience and service.

With the G-E master selector switch, you can plan a wide variety of exciting, new remote-control wiring applications for merchant builders and your private clients.

For builders, G-E remote-control wiring provides added sales ammunition. It's a real talking point—something a builder can actually show to his prospects, a feature that attracts buyers.

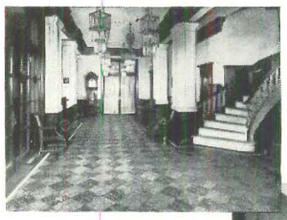
For clients planning their own homes, G-E remote control means convenient living, safer living, more modern living.

Check the five suggested applications of G-E remote control. For first-hand information see your G-E Construction Materials Distributor—for a handy, helpful booklet, write to Section D8-44, Construction Materials Department, General Electric Company, Bridgeport 2, Connecticut.

You can put your confidence in—

GENERAL ELECTRIC

More and more People every day are installing Hood Asphalt Tile!



hotels



offices



cafeterias



schools

because more and more leading architects are specifying Hood Asphalt Tile. And for good reason! This more economical tile is *adaptable* to any location on or below grade, it's *economical* in cost as well as in installation, its maintenance is easy, and it wears longer! And what's more, this easy-to-install tile, with its range of decor-blending colors, is backed by the world-famous research of B. F. Goodrich. So, specify Hood Asphalt Tile from now on—your clients will appreciate it! Write for complete information.

When you specify Asphalt . . . specify HOOD!

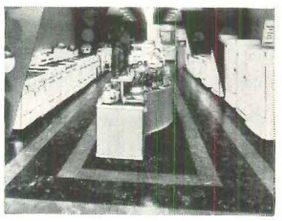


department store

stores of all kinds



furniture store



appliance store

YEARS OF BETTER FLOORING FROM YEARS OF BETTER RESEARCH

B.F.Goodrich
Flooring Division
WATERTOWN, MASS.

LETTERS

ROUND TABLE ON HOUSEBUILDING WASTE

Sir:

Your Round Table Report, *Cut the Standard of Waste to Save the Standard of Living While Rearming*, in February, hits the nail on the head with respect to excessive costs in home building.

You have realistically pin-pointed the faults and failures of the industry. Builders and buyers alike can heartily endorse this approach to lower construction costs through revision of codes.

Congratulations to THE MAGAZINE OF BUILDING for pricking the most vulnerable spot of the industry—waste and misuse of materials!

To help kindle a fire under local building officials, please forward via airmail 100 reprints of this fine article.

CLIFFORD L. RAWSON
Secretary-Manager
Home Builders Institute, Inc.
Los Angeles, Calif.

• Reprints are available in quantity at 5 cents per copy postpaid; no charge for single copies.—ED.

Sir:

I got really excited when I read the report on the Round Table discussion against waste. This is a most welcome step, and I think the results as printed deserve greatest distribution. Years ago I published an elaborate report in favor of an Institute for Building Integration which would go systematically after all the problems involved, and I am delighted to see that we seem now to come on the right track.

The idea that we should not lower the American standard of living but reduce the American standard of waste must appeal to every American and may lead to a strong joint effort. It could cut out with one stroke the dragging weight of old-fashioned methods, which simply do not fit any more our period.

I have passed on the Report to many people including the students in our School of Architecture in Harvard to get their thinking straight about this issue.

WALTER GROPIUS, *Chairman*
Department of Architecture
Graduate School of Design
Harvard University
Cambridge, Mass.

Sir:

. . . I commend you for the purpose and scope of the conference. The subject is one of the most critical affecting the home builders and potential homeowners in today's and tomorrow's market.

The problem of codes, comprehensive zoning and reciprocal trades licensing are particular matters of concern in our contacts with local officials. . . .

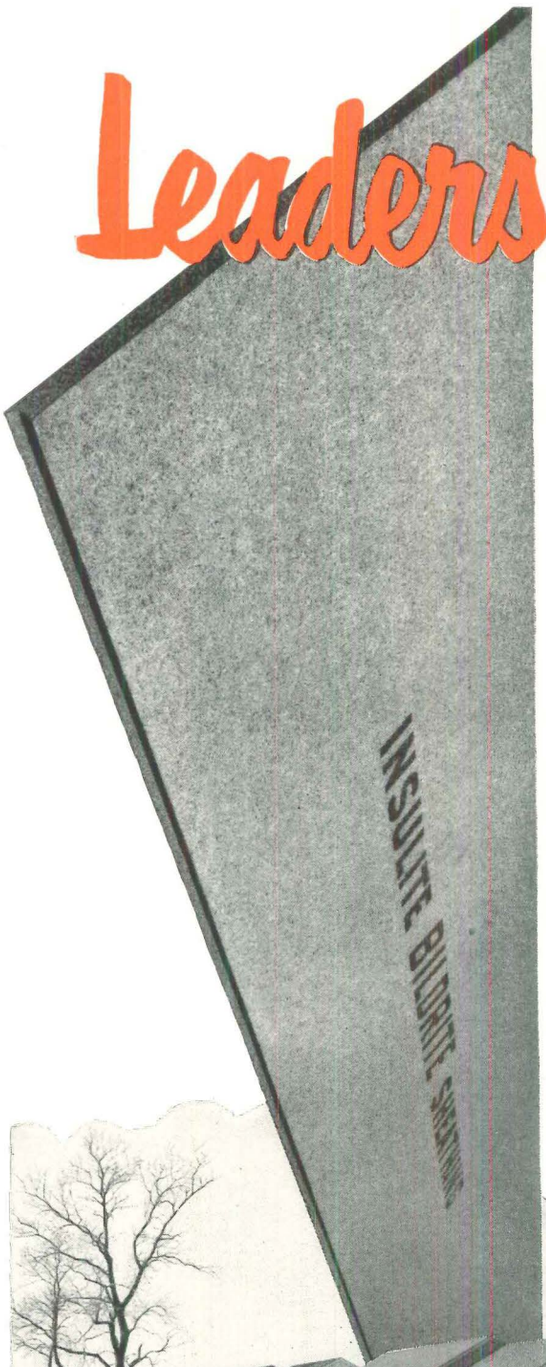
FRANK P. TUFARO, *President*
Home Builders Association of Westchester, Inc.
New York, N. Y.

Sir:

I was most interested in your February issue and the account of the Round Table session. . .

My interest is very real since we are now en

(Continued on page 40)



Leadership in Chicago

BUILDERS PREFER INSULITE* 2 to 1

over the next leading brand of insulating sheathing

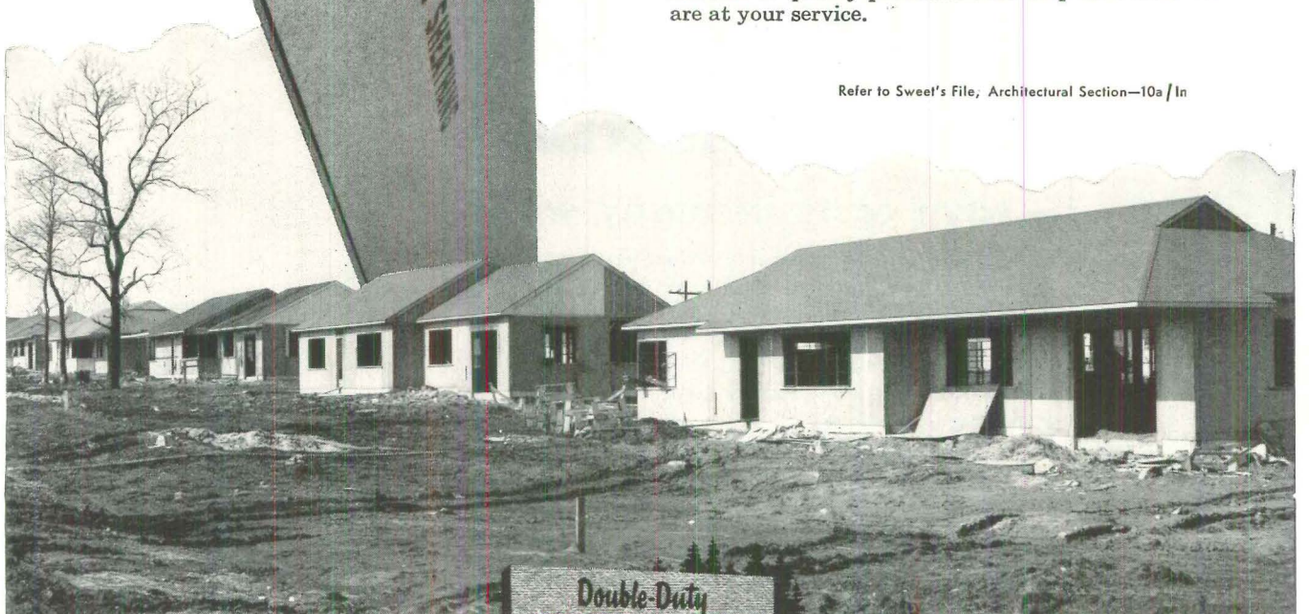
WHEN a building materials product is preferred by a majority of contractors, that *means* something. But when a recent survey showed Chicago contractors preferring INSULITE BILDRITE SHEATHING *2 to 1* over the next leading brand of insulating sheathing—and as many contractors preferred BILDRITE as all other brands of insulating sheathing *combined*—that means *product leadership!*

Listen to what these Chicago builders had to say: "BILDRITE stands up best" . . . "BILDRITE is the toughest of them all" . . . "More rigid" . . . "Best for structural and insulation qualities." And remember, you don't need corner bracing with 4′ BILDRITE.

And Chicago is no exception . . . INSULITE'S tremendous acceptance among contractors *everywhere*, gives further proof of its leadership. This overwhelming contractor preference for BILDRITE attests to its outstanding and dependable job performance. Specify BILDRITE SHEATHING with confidence.

May we show you samples — and give you more complete information about BILDRITE and INSULITE'S full line of quality products. Just drop us a card. We are at your service.

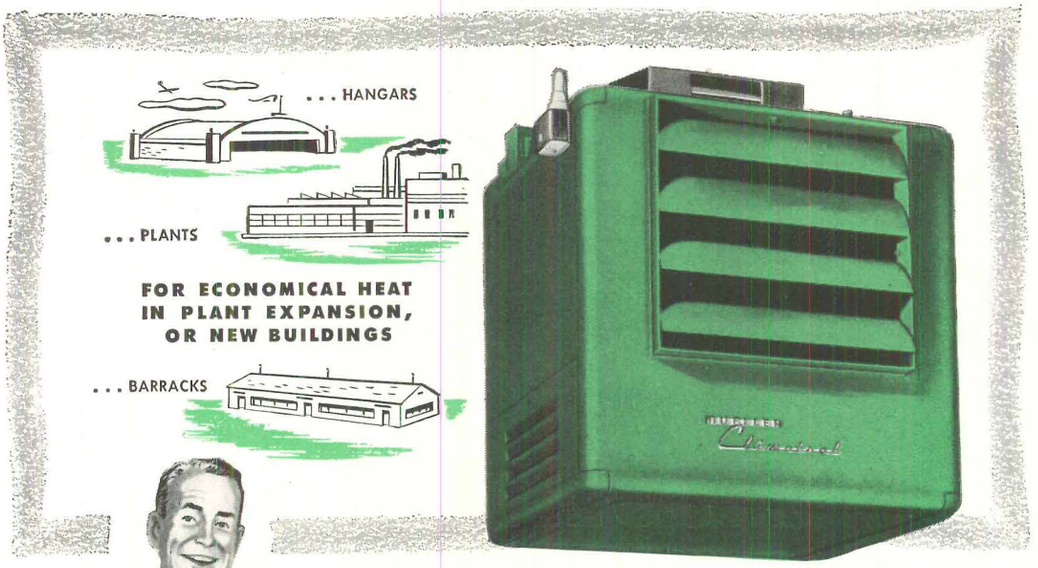
Refer to Sweet's File, Architectural Section—10a / In



Double-Duty INSULITE
✓ BUILDS ✓ INSULATES
Made of Hardy Northern Woods

INSULITE DIVISION
MINNESOTA AND ONTARIO PAPER COMPANY
MINNEAPOLIS 2, MINNESOTA

4-51 *Reg. T. M. U. S. Pat. Off.



Type 150 Suspended Unit Heater — propeller fan type; 60,000 to 150,000 Btu capacities; shipped assembled and pre-wired. AGA and UL approved.

Mueller Climatrol

GAS-FIRED UNIT HEATERS

— save costs in many ways

For an independent heat source when plant expansion exceeds steam capacity, or for a compact, efficient heating system in new construction where time and costs are vital factors — the Mueller Climatrol unit heater line supplies the perfect answer!

Here are a few of the many savings they offer:

- ***Installation Cost is Low*** — shipped pre-wired, completely assembled . . . just hang, connect to gas and power lines and vent. No special chimney needed.
- ***Operating Cost is Low*** — efficient horizontal design assures maximum heat extraction, minimum fuel costs.
- ***Maintenance is Easy*** — can be completely cleaned and serviced from below without lowering the unit.

When you think of space-heating think of Mueller Climatrol. Capacities to fit any job you have. Write for complete information . . . *L. J. Mueller Furnace Co., 2020D W. Oklahoma Avenue, Milwaukee 15, Wis.*

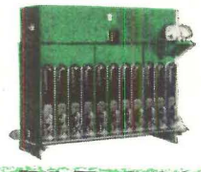
B-56

Capacities and Types for Every Job



Blower Type 151 — Four sizes: 60,000 to 150,000 Btu input; all welded, horizontal design; AGA and UL approved. Shipped assembled and pre-wired.

Floor Type UH — nine sizes: from 180,000 to 540,000 Btu input in 45,000 increments; AGA approved. Easy to assemble and install.



94th Anniversary

Mueller Climatrol

FOR GAS FOR OIL FOR COAL

LETTERS

gaged in putting up a demonstration development of houses which cover most of the features highlighted in the report and . . . can sell between $6,000 and $8,000, even in these high-cost times.

WILLIAM C. MOORE, *V. P.*
Precision-Built Homes
Washington, D. C.

Sir:

. . . My heartiest congratulations to THE MAGAZINE OF BUILDING for the exciting job you are doing in exploring the important field of conservation in housing construction. . . .

One note of caution, however, in a period of emergency like the present—there is a danger of pushing for mere quantity in housing construction with a loss of really essential quality. Ten well-designed, well-built houses may be a much better bet than a dozen houses built to a hurriedly developed bare minimum standard. . . .

CHARLES M. MORTENSEN
Managing Director
The Producers' Council, Inc
Washington, D. C.

Sir:

. . . You missed one big waste—one that should be brought out into the open—and that is the union dictates that make the builder use too much manpower and that also silently limit the amount of work a man is permitted to do in a day. There's your biggest waste in the building industry, but who has the courage to say so?

W. S. LEECH, *V. P.*
G. M. Basford Co.
Cleveland, Ohio

• We do! The subsequent Round Table Report (Mar '50) covered labor's wasteful practices.—ED.

Sir:

. . . I compliment you on the timeliness of this discussion. . . .

NORMAN P. MASON, *Past President*
National Retail Lumber Dealers
Washington, D. C.

Sir:

Sometimes I wonder whether your convention of so-called "experts" meet to declare war, usher in periods of austerity or to hear themselves talk.

It seems to me no matter how well-intentioned they may be that they have lost sight of the true measure, which after all is still man. And so their words are with no meaning, their efforts to no avail.

SEYMOUR KAPLAN
Illinois Institute of Technology
Chicago, Ill.

Sir:

. . . This is truly a constructive step.

J. D. BIGGERS, *President*
Libbey-Owens-Ford Glass Co.
Toledo, Ohio

Sir:

. . . Congratulations on this progress in deve

LETTERS

oping such effective recommendations on eliminating waste in home building.

C. J. Backstrand, *President*
Armstrong Cork Co.
Lancaster, Pa.

Sir:

. . . I compliment you upon your leadership and urge you strongly to continue your program.

L. Douglas Meredith
Executive Vice President
National Life Insurance Co.
Montpelier, Vt.

Sir:

. . . This certainly is interesting and worthwhile. I think you have done a grand job on it.

George A. Bryant, *President*
The Austin Co.
Cleveland, Ohio

Sir:

I am sincerely pleased at the effort put forth to cut the waste and needless costs of home building.

I am deeply concerned and very much irritated by local building codes. . . . As an example our electrical code requires the use of metal conduit on all types of new construction; this prevents economical wiring of low cost homes. . . .

An $8,000 frame cottage need not have the same requirements as a $5,000,000 office building. There have been cases of plumbers who have worked for years in other localities and then have come to Pueblo and couldn't plumb one of our houses because as all waste lines from fixture to stack must be lead-and-wipe joint.

There are many other items, some brought about by FHA, some by labor unions; in fact, many of our codes are engineered by trade unions to increase the amount of work for their members. For example, a manufactured lead flashing must not be used for vent pipes, but made up on the job by the plumber, which takes much more time than using one factory mass-produced.

One of our clients saw the plan of Levitt's new Landia house and liked it very much, also noticed the price tag of $13,000, and at once wanted to know why it couldn't be built in Pueblo for that amount. They can understand that a board foot of lumber may vary in price in different localities but cannot understand why it takes more material or more hours of labor.

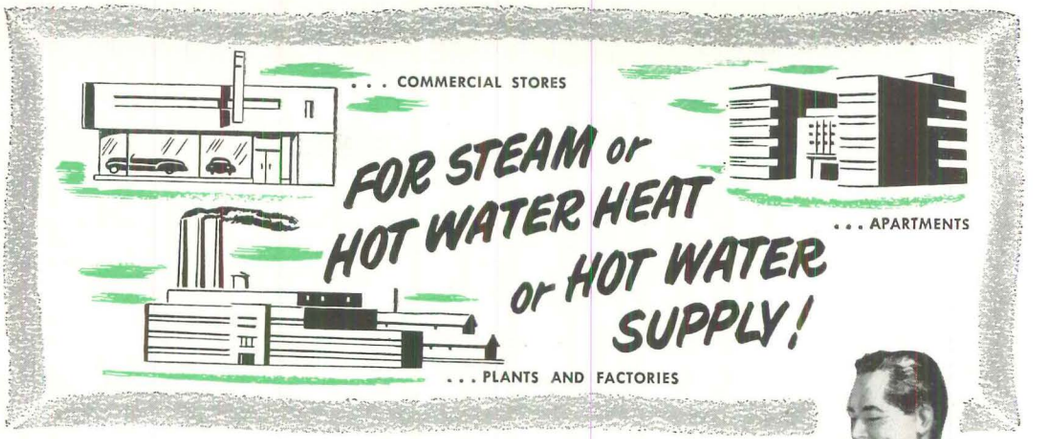
. . . I think your magazine is the most interesting and instructive on the market.

W. B. Aughenbaugh
Aughenbaugh Construction Co.
Pueblo, Colo.

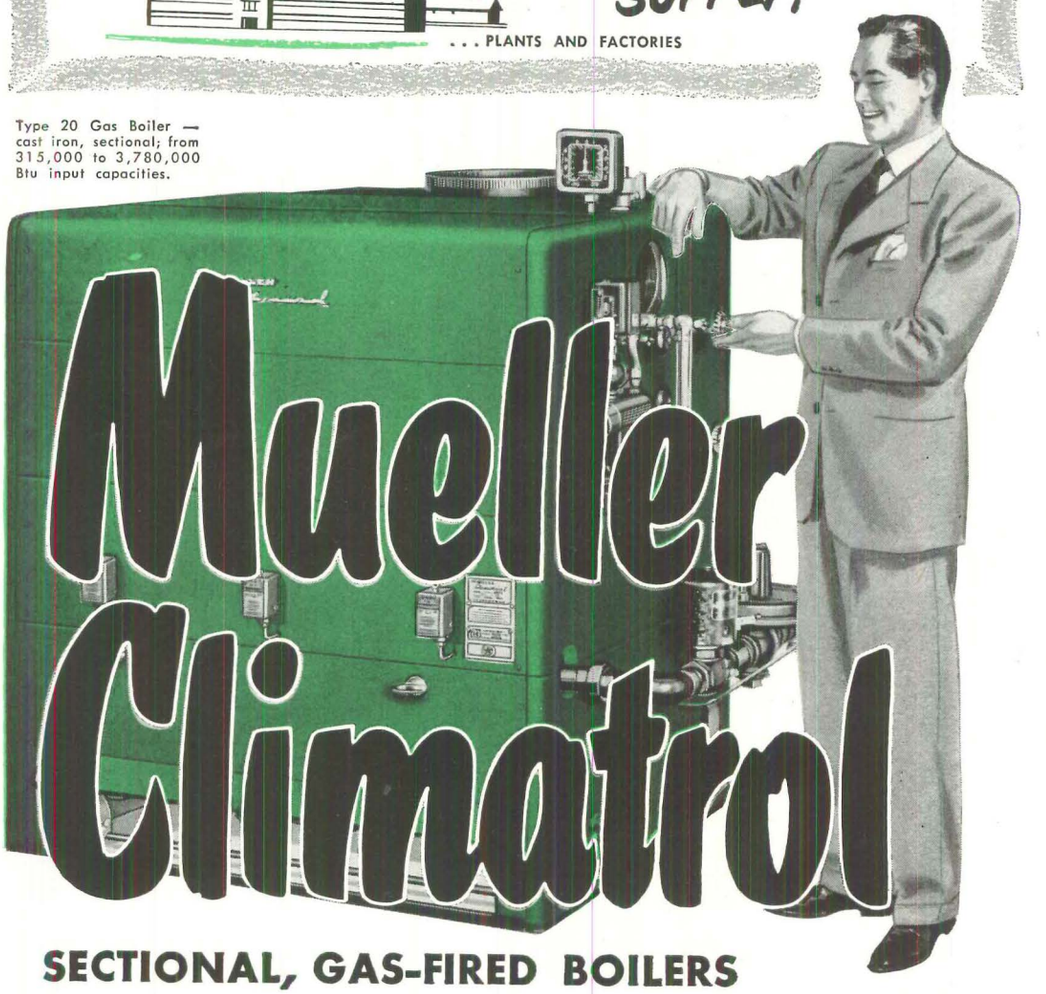
Sir:

. . . I was impressed with the conclusions reached by the Round Table, and while I believe that in many areas of this country a great deal has already been accomplished toward achieving

(Continued on page 46)



Type 20 Gas Boiler — cast iron, sectional; from 315,000 to 3,780,000 Btu input capacities.



Mueller Climatrol

SECTIONAL, GAS-FIRED BOILERS

—low cost in every way

No matter how you look at it, the Mueller Climatrol line gives you the best answer to your radiant and radiator heating and hot-water supply jobs. Quality construction, compact design, advanced engineering—all 'round boiler "know-how" — make every Mueller job low-cost from first to last:

- ✓ **Initial Costs are Low** — close-to-size capacities give you an economical installation for every job. Factory "assembled" tests make it easy to deliver an efficient installation.
- ✓ **Operating Costs are Low**—meticulous engineering of every part plus top-quality material and construction standards assure years of fuel-thrifty economy with minimum service and maintenance.
- ✓ **Future Expansion Easy** — sectional cast iron construction makes it easy to add capacity for additional loads simply by adding new section-burner units.

And that is just a brief outline of the many low-cost advantages of Mueller Climatrol boilers. Write for complete details . . . *L. J. Mueller Furnace Company, 2020D W. Oklahoma Avenue, Milwaukee 15, Wisconsin.*

B-55

94th Anniversary

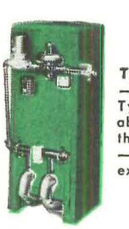
Mueller Climatrol

FOR GAS FOR OIL FOR COAL

Capacities from 54,000 to 3,780,000 Btu (including Type 20 above)

Type 10 Gas Boiler — for steam or hot water heating or hot water supply. Nine sizes — 54,000 to 378,000 Btu input.



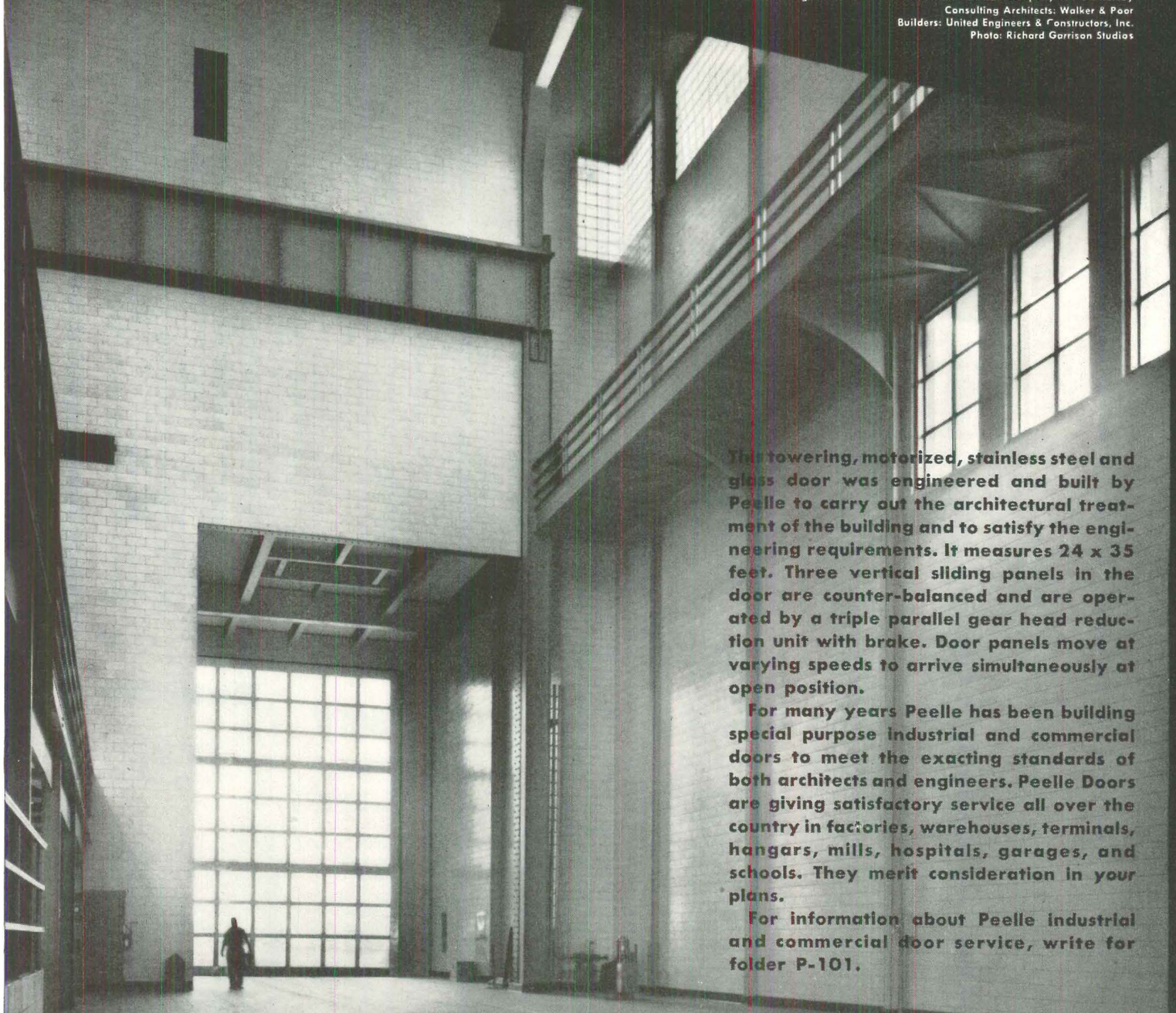


Type 11 Gas Boiler — Same as the Type 10 shown above except for the outer casing — controls are exposed.

An engineering necessity becomes an architectural asset *through* this custom engineered PEELLE DOOR

SEWAREN GENERATING STATION

Owners and Engineers: Public Service Electric and Gas Company of New Jersey
Consulting Architects: Walker & Poor
Builders: United Engineers & Constructors, Inc.
Photo: Richard Garrison Studios



This towering, motorized, stainless steel and glass door was engineered and built by Peelle to carry out the architectural treatment of the building and to satisfy the engineering requirements. It measures 24 x 35 feet. Three vertical sliding panels in the door are counter-balanced and are operated by a triple parallel gear head reduction unit with brake. Door panels move at varying speeds to arrive simultaneously at open position.

For many years Peelle has been building special purpose industrial and commercial doors to meet the exacting standards of both architects and engineers. Peelle Doors are giving satisfactory service all over the country in factories, warehouses, terminals, hangars, mills, hospitals, garages, and schools. They merit consideration in your plans.

For information about Peelle industrial and commercial door service, write for folder P-101.

"it's **PEELLE** *engineered"*

BETTER-ENGINEERED PRODUCTS FOR MORE THAN 45 YEARS

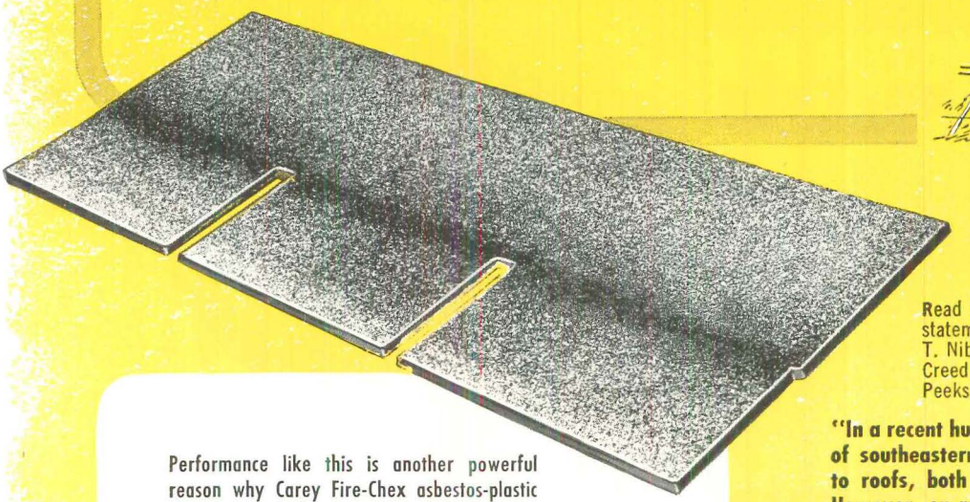
THE PEELLE COMPANY
47 STEWART AVENUE, BROOKLYN 6, N. Y.
Offices in principal cities

SEE OUR CATALOG IN SWEET'S

PEELLE MOTORSTAIRS • FREIGHT ELEVATOR DOORS • DUMBWAITER DOORS • INDUSTRIAL DOORS

NOW! More proof of Fire-Chex superiority

FIRE-CHEX SHINGLES DEFY hurricane winds







Read this sworn statement from T. Niblo Creed, Creed Bros., Inc. Peekskill, N. Y.

"In a recent hurricane that lashed this area of southeastern New York state, damage to roofs, both old and new, was heavy. However, on roofs where Carey Fire-Chex shingles were installed, we could not find even one shingle that had been loosened."

Signed:

T. Niblo Creed

Performance like this is another powerful reason why Carey Fire-Chex asbestos-plastic shingles should be your choice for roofing!

Here are the easy-to-see reasons! Remember—Fire-Chex is the only roofing that provides all these important advantages—

1. Amazing Wind-and-Weather Protection

Fire-Chex are husky heavyweights . . . a whopping 325 lbs. per sq. They lie flat, stay put, even through hurricane winds.

2. Hail Won't Harm

Fire-Chex Asbestos-Plastic Coating is so heavy that hail bounces off harmlessly.

3. Lasts Far, Far Longer

Accelerated weather tests prove conclusively that Fire-Chex have a much longer life than ordinary shingles.

4. Highest Fire-Safety Rating

Only Fire-Chex are rated Class A* by Underwriters' Laboratories, Inc. This is the highest Fire-Protective rating any roofing material can earn.

5. Exclusive New Solid Colors and Shadow Blends

The crowning glory for any roof...Fire-Chex come in rich, solid colors and in exclusive shadow-blends to make roof designs which are copyrighted as "works of art."

*Without asbestos underlayment.

Carey

FIRE-CHEX SHINGLES

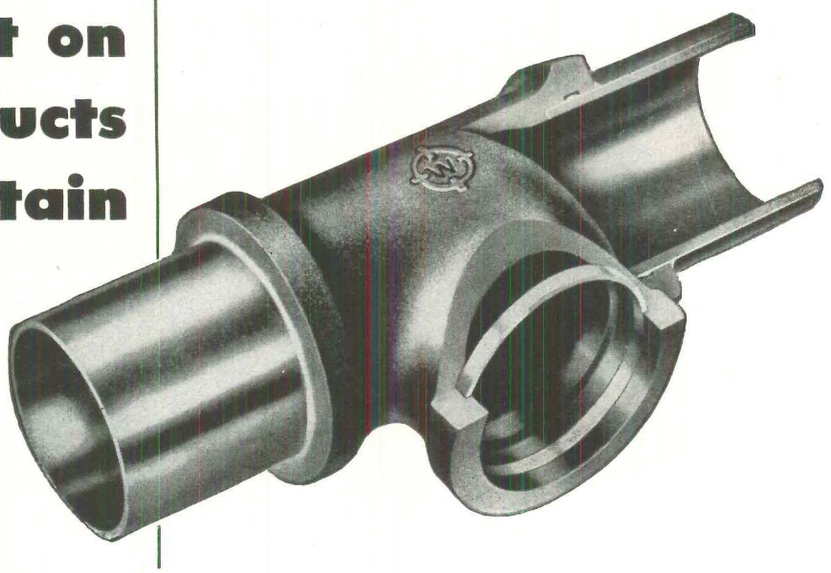
Specify Carey Fire-Chex for lasting protection and beauty! For further information, see your Carey Dealer—or write for literature.

The Philip Carey Mfg. Co., Lockland, Cincinnati 15, Ohio
In Canada: The Philip Carey Co., Ltd., Montreal 25, P. Q.

FROM THE HOUSE OF CAREY — Bathroom Cabinets and Accessories • Ceramo Siding • Tri-Tone Asbestos Shingles • Fire-Chex Asbestos-Plastic Shingles • Rock Wool Insulation • Other Famous Products for Home, Farm and Industry.

DON'T BE SATISFIED WITH HALF-WAY MEASURES...

insist on Walseal® products and be certain



– the FACTORY INSERTED Ring insures FULL PENETRATION of the Silver Alloy . . . a perfect joint

Today, contractors . . . builders . . . architects are using brazed connections, in ever increasing numbers on their brass and copper pipe runs. However, they must be certain that the correct brazing alloy is used; that the joint has penetration of alloy up the shoulder of the fitting.

That's why more and more are turning to Silbraz® joints made with Walseal valves, fittings and flanges which assure the proper amount of alloy with no waste. They know that the finished joint not only will withstand hydrostatic pressure, but it will also withstand terrific impact and vibration – in fact, no correctly made Silbraz joint has ever been known to creep or pull apart under any pressure, shock, vibration or temperature which the pipe itself can withstand.

Furthermore, it is a relatively simple operation to make a Silbraz joint – no heavy scaffolding need be erected . . . just cut the pipe, flux, assemble, then braze, following the technique recommended by the Walworth Company. A silver brazing alloy – FACTORY INSERTED – in each port flows out when heated with the oxyacetylene torch, making a joint that is stronger than the pipe itself . . . a one-hand operation, with the mechanic out of the path of the deflected heat – at all times.

For full information about Silbraz joints made with Walseal products, write for Circular A-1.

WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

For Efficiency, Economy, Convenience

YOU CAN'T BEAT

Nepcoduct-

THE *Simplified* UNDERFLOOR WIRING SYSTEM



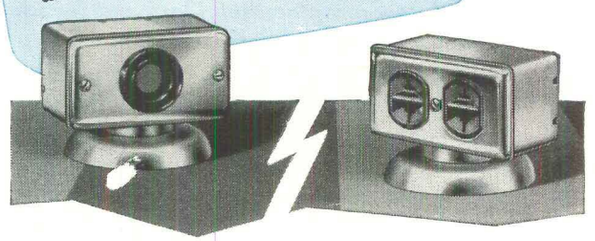
What do you want in *your* underfloor wiring system? *Efficiency?* NEPCODUCT adapts to any type of floor construction . . . provides for all the electrical service you will ever need.

Or maybe you want *economy.* NEPCODUCT is the most economical method for providing wiring facilities for light and power, signal circuits, communication and telephone. Costly cutting of the building structure or routing of concrete is eliminated . . . electrical extensions are needless.

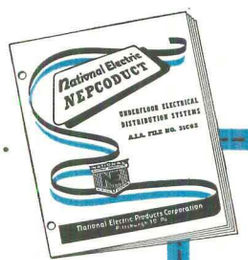
Want *convenience?* NEPCODUCT provides outlets already threaded, *wherever needed,* at the floor surface . . . regardless of office space or furniture arrangement.

What about *simplification?* NEPCODUCT consists of one standard size duct for either high or low potential wiring. Only three combinations needed for *all* your wiring needs. A minimum number of junction boxes and fittings . . . 60% less assembly parts. NEPCODUCT eliminates confused specifications . . . is easy to understand . . . still easier to lay out and maintain.

The NEPCODUCT system also provides smartly modern service fittings designed for added dignity, beauty and easy installation.



Steel for Permanence . . . Grounded for Safety.



WRITE TODAY FOR THE FREE NEPCODUCT CATALOG. This coupon will bring you a copy.

National Electric Products Corporation
1334 Chamber of Commerce Building
Pittsburgh 19, Pennsylvania

Please send me the illustrated Nepcoduct catalog.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

EVERYTHING IN WIRING POINTS TO

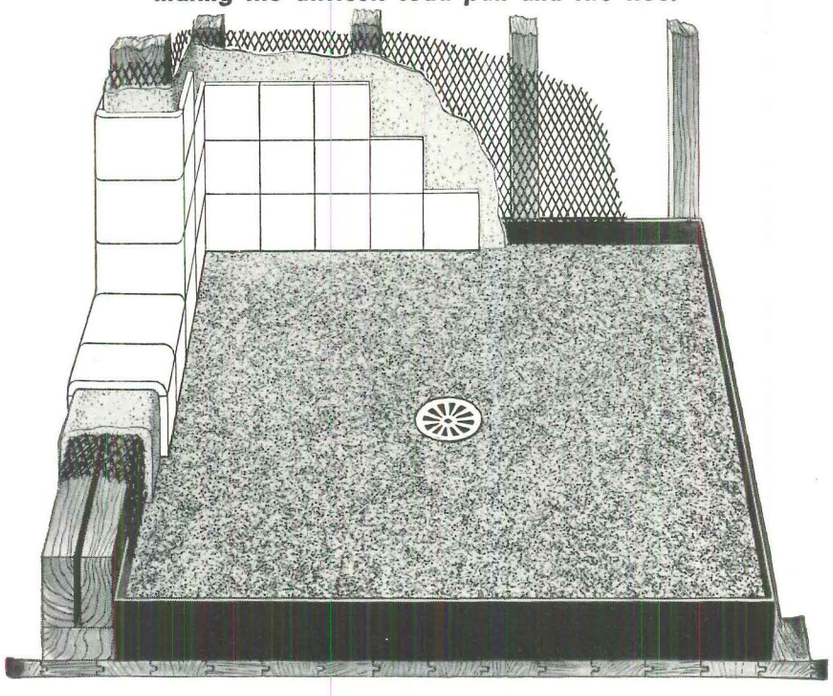
National Electric
PRODUCTS CORPORATION
PITTSBURGH, PA.

Fiat Precast Receptors

(Regular black & white or special colored terrazzo)

...for Built-up Tile Showers

Save money and speed up the job by eliminating the difficult lead pan and tile floor



Details of suggested construction in building up a tile shower on a Fiat precast receptor. Metal lath and foundation plaster are brought down inside the rust-proofed metal flange. The tile setter starts directly with the wall construction without the delay involved in laying a tile floor and waiting for it to harden to a working surface.

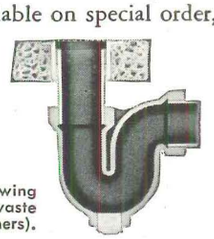
Fiat precast terrazzo receptors are made of black and white marble chips and white cement, ground and polished. A rustproof galvanized reinforcing flange and a 2″ brass drain fitting are cast integral with the receptor to form a strong, leakproof, slip-proof, non-absorbent floor for the shower.

The use of a precast receptor eliminates the easily damaged lead pan and the labor consuming job of laying a tile floor. It enables the contractor to complete the shower faster and produce a better job at a lower cost.

Fiat precast receptors reduce the danger of leaky cracks developing in the tile shower walls by providing a solid, rigid foundation that is not affected by shrinkage of supporting wood framing or settling of the building.

The attractive appearance of terrazzo makes a beautiful floor that is in perfect harmony with tile walls. Various colored terrazzo is available on special order, to blend with tile colors.

Your plumbing contractor can get quick delivery of a Fiat receptor as many plumbing wholesalers have Fiat receptors in stock. Standard square type sizes—32″ x 32″, 36″ x 36″, 40″ x 40″. Corner type—36″ x 36″, 40″ x 40″.



Section through pre-cast receptor showing brass drain and adaptation to 2″ waste pipe and "P" trap. (Trap and pipe by others).

FIAT

FIAT METAL MANUFACTURING COMPANY

Three complete plants

9301 Belmont Ave., Franklin Park, Ill.
Long Island City 1, N. Y. Los Angeles 33, Calif.

In Canada: The Porcelain and Metal Products, Ltd. Orillia, Ontario

LETTERS

the aims considered by the Round Table, I recognize that much remains to be done. As an industry we should support all programs which seek to improve design, site planning, and the betterment of existing building, plumbing, electrical and health codes.

My congratulations. . . .

E. M. SPIEGEL, *President*
N. J. Home Builders Assn.
New Brunswick, N. J.

Sir:

. . . I congratulate your magazine, and the men participating in this Round Table report, for a most direct approach to the problem of waste in the building industry which affects the welfare of almost everyone.

Most important of all, however, would be the tremendous boost your plan would give to the idea that this country can wage war and at the same time produce ample goods for civilian use. We must produce for civilian use as well as for military use if this country is to survive. Your program should enjoy the support of every thinking person connected with the building industry today.

H. E. GUISINGER
Guisinger Realty Co.
Dallas, Tex.

Sir:

. . . I think you're on the right track, and I like the group you set up. They are the people who can do something about waste in construction. By all means, let's induce them to continue their study.

MELVIN H. BAKER, *President*
National Gypsum Co.
Buffalo, N. Y.

Sir:

. . . Very interesting and informative. How rewarding it is to undertake something which you can sense as being successful.

Congratulations!

J. P. WEYERHAEUSER, JR., *President*
Weyerhaeuser Timber Co.
Tacoma, Wash.

Sir:

Frankly I think you are doing an outstanding and I might say fearless job because undoubtedly some toes are going to be stepped on. . . .

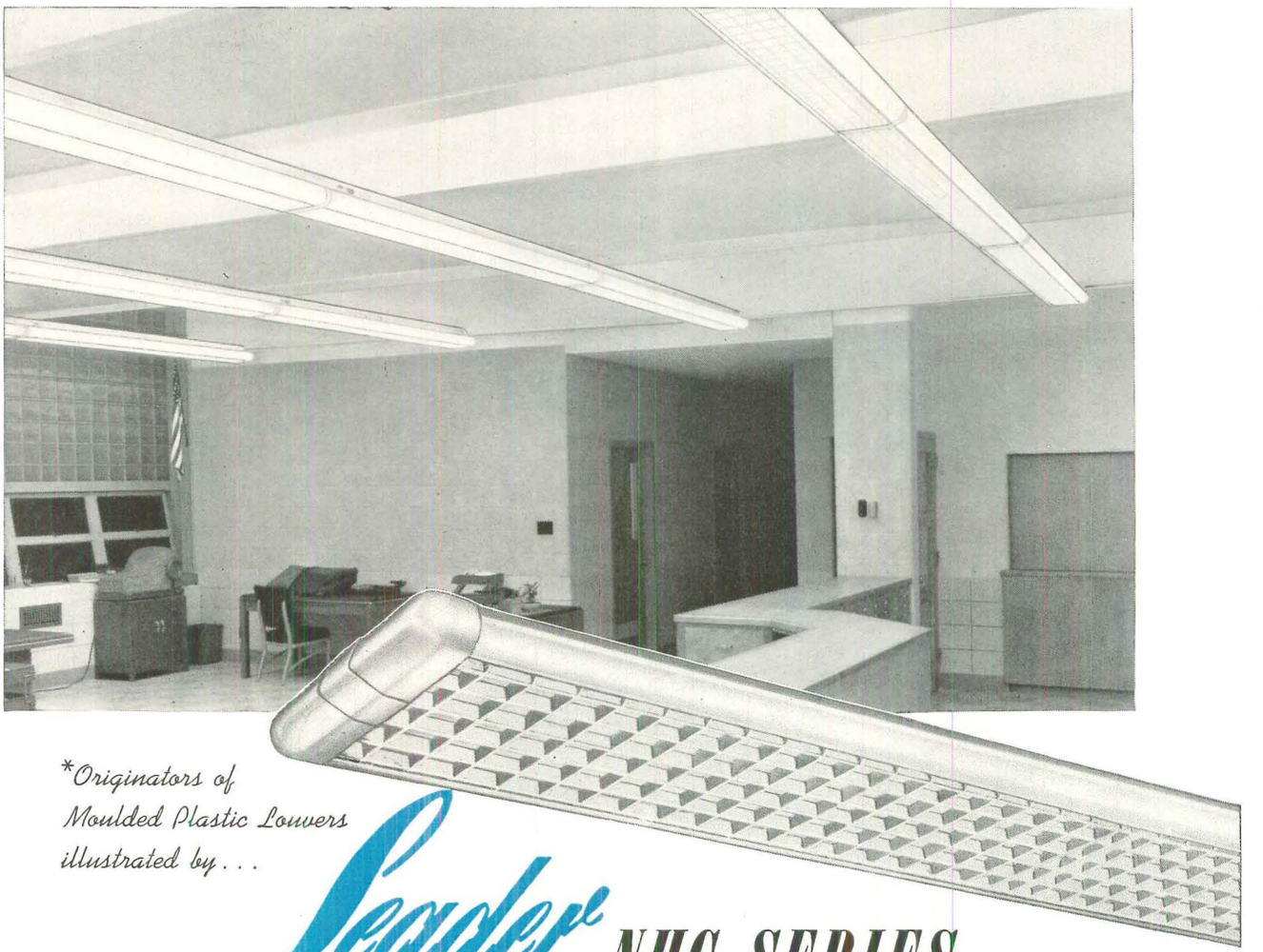
H. C. TURNER, JR., *President*
Turner Construction Co.
New York, N. Y.

Sir:

. . . You are to be highly commended on your forward step in meeting head-on the problem of waste which has always dogged the building industry and every industry associated with it. You have made a grand start and we will be greatly interested to note what develops. . . .

(Continued on page 50)

LEADER*—means fine lighting



*Originators of Moulded Plastic Louvers illustrated by . . .

Leader NHC SERIES

SPECIFICATIONS

NHC Series

For 2, 3 or 4 Slimline lamps in 48", 72" or 96" length. One-piece louver of injection moulded plastic in choice of 31° or 45° shielding. Plastic is warp-proof, color-fast, "destaticized." Louver swings down to right or left for ease of servicing. Channel of 18 ga. steel. Curved translucent plastic side panels. Deep drawn end caps of 20 ga. steel, beautifully finished.

VL Series

Same specifications as above, but for 2, 3 or 4 40-watt lamps. Optional instant-start.

You'll find Leader's NHC Slimline fixtures installed wherever the demand is for the *finest* in fluorescent lighting—throughout the land in offices, schools, stores, all types of commercial establishments. These trim, slender, beautifully proportioned fixtures add distinction to any decorative effect. Feather-weight moulded plastic louver—*originated* by Leader—"sifts" light rays for pleasing, efficient diffusion. Precision engineering, beauty of appearance, economical performance and ease of servicing combine to make NHC the first choice when the demand is for the finest.

Sold and installed by the better electrical dealers and contractors

Leader *America's No. 1 Lighting Equipment Manufacturer*

LEADER ELECTRIC COMPANY • 3500 North Kedzie Avenue • Chicago 18, Illinois

Leader Electric — Western: 800 One Hundredth Avenue • Oakland 3, California
Campbell-Leader, Ltd.: Brantford, Ontario • Canada

MODERN BANK BUILDING is typical of

up-to-date Houston — one of America's fastest-growing cities.

Building is air conditioned by Frigidaire.



Located 15 blocks from the center of Houston is the new building of the South Main State Bank — designed to keep pace with the needs of this growing Texas community.

LOCATION: Houston, Texas
BALDWIN N. YOUNG, Architect
SOUTH MAIN STATE BANK, Owner



Efficient, yet comfortable, moderately sized, yet spacious, is the banking floor of the two-story building. The second floor houses an insurance firm.

A warmly attractive, yet dignified, simplicity makes this new Houston bank building an excellent example of the modern trend.

And like so many modern bank buildings, this new building provides customers and personnel with the cool comfort of Frigidaire air conditioning.

Working closely with the building's architect and general contractor, Frigidaire engineers planned an air conditioning system that is simple, effective and trouble proof.

The three rugged Frigidaire compressors that power the system are located in the basement. When the thermostatic control on either of the two floors above calls for cooling, refrigerant is pumped up from the compressors to a cooling unit on that floor. And since the cooling units have been equipped with hot water coils for heating, the system provides dust-free, air-conditioned comfort all year 'round.

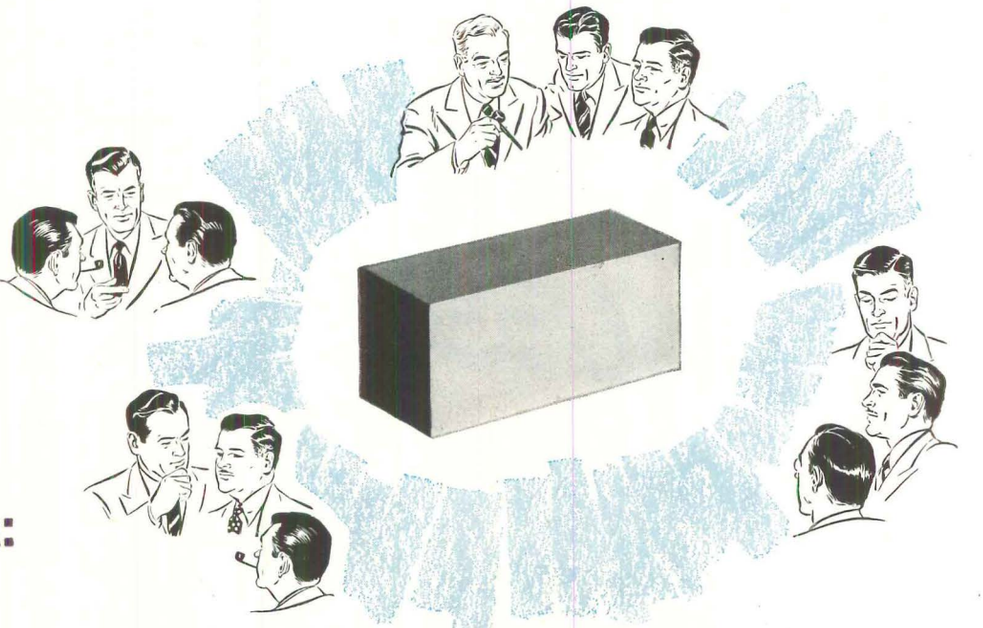
Described by the bank as "highly satisfactory," this is just one of the many Frigidaire installations of all types made each year. So, whatever your next air conditioning problem is, why not call the Frigidaire Dealer, Distributor or Factory Branch that serves your area? Look for the name in the Yellow Pages of your phone book. Or write Frigidaire Division of General Motors, Dayton 1, O. In Canada, Leaside 12, Ont.

FRIGIDAIRE America's No. 1 Line of

Refrigeration and Air Conditioning Products

Refrigerators • Food Freezers • Water Coolers • Electric Ranges
Home Laundry Equipment • Electric Water Heaters • Air Conditioning
Electric Dehumidifier • Commercial Refrigeration Equipment

Frigidaire reserves the right to change specifications, or discontinue models, without notice.



"~~10~~ NOW 12 Good Names to Know" ask:

"How can we better the best?"

Today you are getting Facing Tile at its best from these "12 Good Names to Know."

Continuous research over the past ten years has brought many improvements in the unit design and in the properties of both the body and glazes of this Facing Tile.

But we are not satisfied. We believe that research will make what is *best* today, even *better* tomorrow—even more efficient, even more economical to use.

Finding the way to better Facing Tile is not always easy.

Still, through constant testing and retesting in the laboratory and plant, our researchers do find the answers. And in the course of this work they make certain that the products we offer you today meet the quality specifications of the Institute!

You can take advantage of the Institute's research program when you specify materials for your next job. Just call on one of the "12 good names" and you'll be sure of Facing Tile at its best. For detailed information write the Institute, Desk MB-4, for our new catalog 51-C.

12 GOOD NAMES TO KNOW

BELDEN BRICK CO.
Canton, Ohio

CHARLESTON CLAY PRODUCTS CO.
Charleston 22, West Virginia

THE CLAYCRAFT CO.
Columbus 16, Ohio

HANLEY CO.
New York 17, New York

HOCKING VALLEY BRICK CO.
Columbus 15, Ohio

HYDRAULIC PRESS BRICK CO.
Indianapolis, Indiana

MAPLETON CLAY PRODUCTS CO.
Canton, Ohio

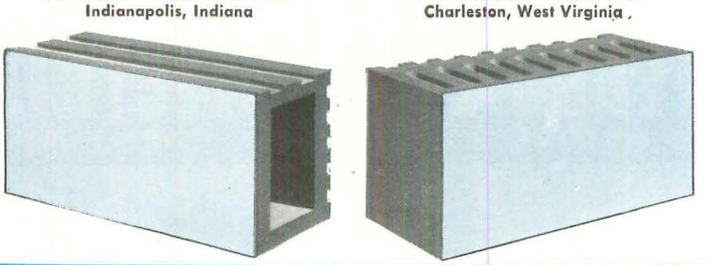
METROPOLITAN BRICK, INC.
Canton, Ohio

McNEES-KITTANNING CO.
Kittanning, Pennsylvania

NATIONAL FIREPROOFING CORP.
Pittsburgh 22, Pennsylvania

STARK CERAMICS, INC.
Canton, Ohio

WEST VIRGINIA BRICK CO.
Charleston, West Virginia



FACING TILE INSTITUTE

1520 18th Street, N. W., Washington 6, D. C.



FAN-PLAN
with
EMERSON-ELECTRIC
Kitchen Ventilators

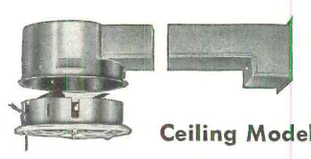
You put "sales appeal" in your homes when you specify Emerson-Electric Kitchen Ventilators! You can say "cooler, cleaner kitchens" when you point out this looked-for feature in modern home planning. Economically priced, easily installed in any construction, these dependable fans will give years of trouble-free service . . . and that means *satisfied* buyers, too. So close your sales in the kitchen—be sure to specify Emerson-Electric Kitchen Ventilators! For complete data, write for Bulletin No. 418

THE EMERSON ELECTRIC MFG. CO., ST. LOUIS 21, MO.



Wall Model . . .

- Telescoping adjustable sleeve fits walls 5¼″ to 13″.
- Square outside frame, easy to brick or frame around.
- Special outer door seal gives weather protection.
- Induction motor, 10″ blade moves 470 c.f.m.



Ceiling Model . . .

- Adjustable sleeve joint fits standard 3¼″ x 10″ duct
- Outside grille has angle baffles for weather protection
- Automatic shutter closes duct when fan is not operating
- Dependable Emerson-Electric motor equipped with special thrust bearings.

SPECIFY EMERSON-ELECTRIC ATTIC FANS



Build cool, summer comfort right into your homes by installing Emerson-Electric Attic Fans! Here is another sales-clincher . . . available in sizes from 30″ to 48″. Note: you'll save *half* on installation by installing during original construction.

EMERSON ELECTRIC
FANS • MOTORS **APPLIANCES**

LETTERS

However, we do not agree with your analys of the heating problem. We believe that you group and ours are in agreement that, despite th fact that those small homes which will be bui during this and coming years will most likely b termed "defense homes," they must still be bui in accordance with such standards as will wa rant the long range investment risk which wi back them. Hence, they will have to have d signed into them the provision of heating com fort in addition to shelter. The past half centur of heating practice and research has proved tha only with a central heating system is overa house heating comfort available.

We will not quarrel with you that if the preser state of emergency prevails over any considerab period, new or "substitute" materials may hav to be incorporated into these systems. But would certainly be a backward step for the buil ing industry, as far as house heating is co cerned, to retrogress to the old pot bellied sto approach to home comfort. This method may b well surrounded by a wealth of nostalgic mem ories but we doubt that the modern TV-educate homeowner will be content to experience th "toasted in front, frozen in back" brand of com fort with which our grandfathers had to conten

GEORGE BOEDDENER
Managing Director
National Warm Air Heatin & Air Conditioning Asso
Cleveland, Ohio

PRIZE WINNING HOUSE

Sir:

My husband and I are delighted with the hou designed by Bruce Walker that won your conte We would like to build it. Are plans and spe ifications available? Where could we get them

The only changes we wish to make are to bui a studio in place of the screen porch and to ma the kitchen more a part of the living room— old "keeping room" in modern dress. . . . I wa to be part of the family while I cook. . . .

We are serious about building this house.

ANNA MAY WILSO
Winnetka, Ill.

• Requests for plans for any prize-winning hou should be made of the designer. For a list of nam and addresses see Mar. '51 issue, p. 110.—ED.

Sir:

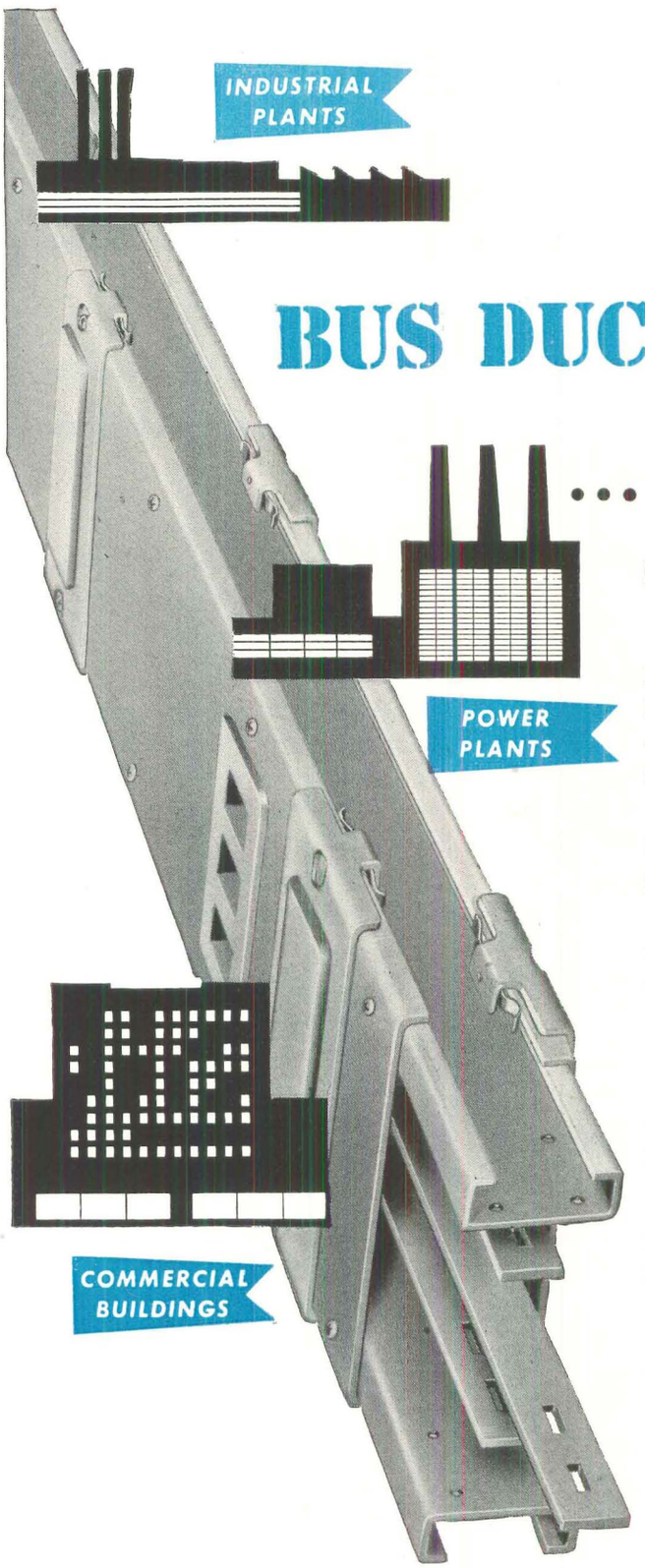
Brace yourselves, gentlemen!

When you write up the qualities of the pr winning design in the NAHB-FORUM Hou Design Competition, they better be good or y will not have to renew my subscription in 19.

So far, everyone who has studied the winni plan published in the newspapers has in no u certain terms classed it as "childish."

This cannot be the best that architects America have to offer for the middle man. If

(Continued on page 54)



BUS DUCT IS FLEXIBLE

...More power capacity at lower installed cost

Laying out new secondary power distribution systems? Expanding production line requirements? Do it more quickly, more economically, provide more flexibility for future change-overs—with Westinghouse Bus Duct.

First, Westinghouse Duct provides more power with less equipment—up to one-third less—than any comparably rated system of wireway, cable or conduit.

Second, Westinghouse Plug-In Duct is safer. Prestite insulators, impervious to moisture and of high mechanical strength, support the busbars, preventing accidental contact with live parts.

Third, Westinghouse Duct minimizes down time, cuts total installed cost at original installation, and during change-over or expansion. Sections of duct, completely prefabricated, are quickly and easily mounted.

Fourth, Westinghouse Duct is designed for virtually any type of building, and for any load requirement. For light loads, use Plug-In Duct. For high capacity use Low-Impedance Duct.

For complete information, call your Westinghouse representative or write for Manual B-4272-A, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-30059

DESIGN TESTED AND VERIFIED IN THE Westinghouse HIGH POWER LABORATORY

YOU CAN BE SURE.. IF IT'S Westinghouse BUS DUCT

Everything but the
in Joe Lenny's

Yet he was able to offer his houses—each equipped with General Electric Kitchen-Laundry—for only $9500



Joseph P. Lenny

Builder J. P. Lenny of Runnemede, N. J. had a strong conviction about *selling* houses.

He felt that it was most important to identify his "Cinderella" houses with QUALITY.

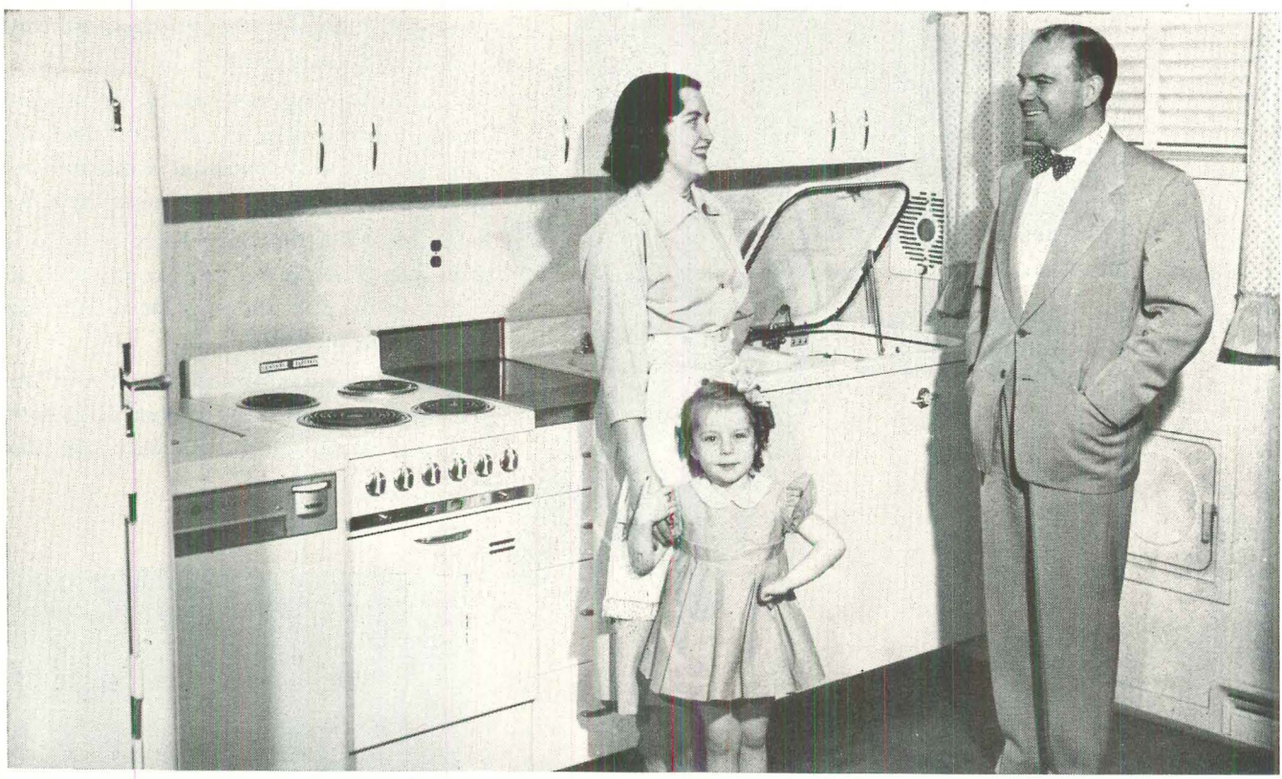
And, he felt that the best and surest way to identify his houses with *quality* was to install kitchen and laundry equipment that housewives know is the *finest* obtainable.

So he contracted to equip every one of his "Cinderella" homes with a General Electric Kitchen-Laundry, and was still able to offer it for only $9500 under "Packaged Mortgage" terms.

Result: He sold out the entire first section of 55 homes one week end!

In the pictures on these pages you see Mr. Lenny talking with Mrs. Marie Breen of 156 Patricia Lane who purchased one of his "Cinderella" houses last year. Her enthusiastic comments are typical of those of her neighbors.

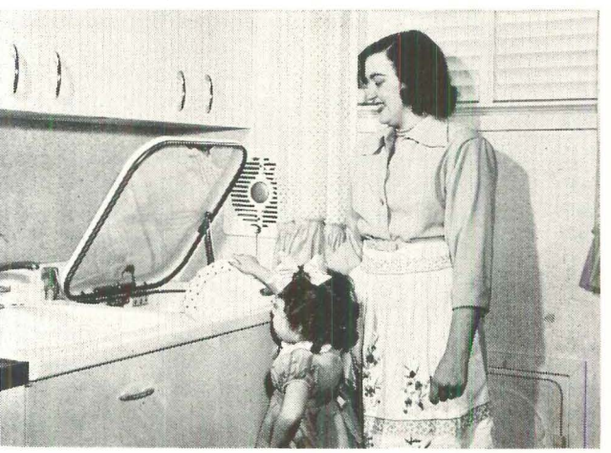
Home Bureau, General Electric Company, Bridgeport 2, Connecticut.



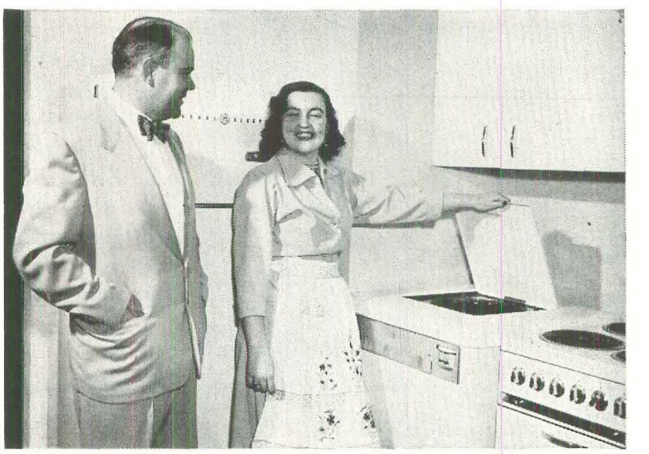
Mrs. Breen says: "We're so delighted with all our wonderful G-E appliances, and our friends are envious!

"I'm constantly amazed how many hours these G-E appliances save me, and it's still hard for me to believ that they cost so little under the terms of our mortgag *. . . less than five dollars a month extra!*"

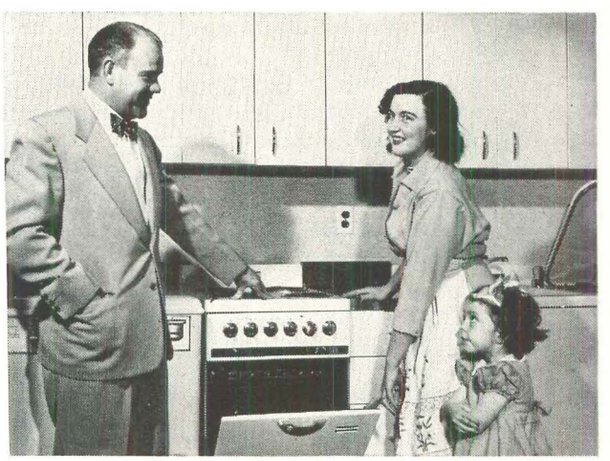
glass slipper "Cinderella" home!



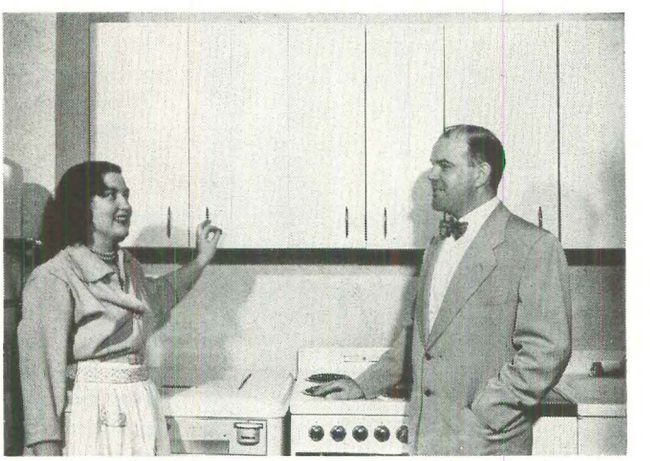
It's wonderful to stack dirty dishes in my G-E Dishasher after guests have left late at night—*and go right bed!*" says Mrs. Breen. "In the morning they're parkling-clean, ready for service again!"



"My G-E Clothes Washer saves me so much time, too. My rayon blouses and slips come out *damp*-dry . . . and I iron them immediately. I have two children and my G-E Clothes Washer is in service every day of the week!"



low do I like my G-E Range? It's the finest range I er owned. The temperature is so very even . . . and ıever have a lopsided cake any more! Now my gra-es, puddings and other baked foods come out just ght. This G-E Range heats up so *fast*, too!"



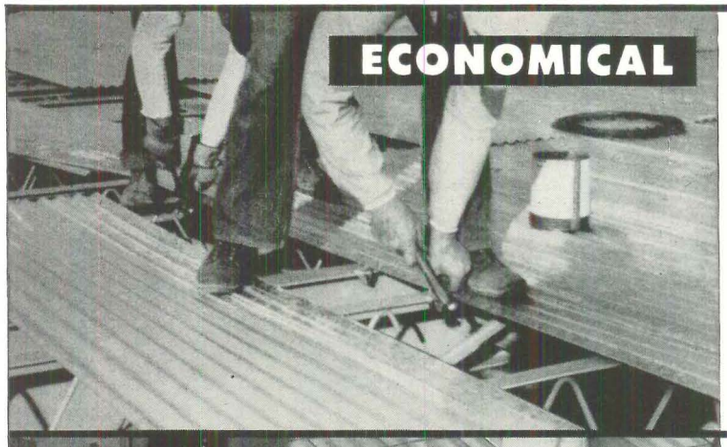
"I'm sure happy there's a General Electric Kitchen-Laundry in my home! So many of my friends who have become home owners recently, tell me they wish their new house had included all of this fine General Electric equipment."

You can put your confidence in—

GENERAL ELECTRIC

THE ONLY FORM FOR STEEL JOIST CONCRETE FLOORS AND ROOFS

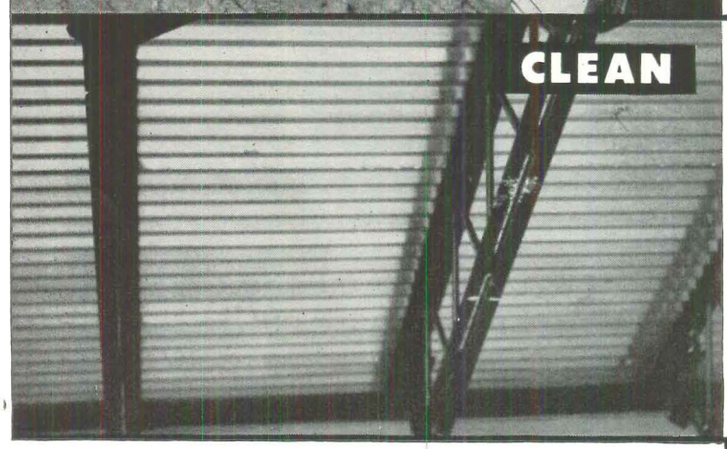
Corruform



CORRUFORM sheets are easily placed. Fasteners are positive for all common joists and beams. Lapping is automatic. No sag or material waste. Concrete is placed and finished by common practice.



CORRUFORM is nearly twice as strong as ordinary steel of equal weight. Tough tempered to spring back under abuse. Provides a secure form for trades and concrete — no side pull on joists, beams, or walls.



CORRUFORM is true and level. No cleanup necessary on floors below, no unsightly leakage. Bright, decorative corrugated pattern for exposed ceilings. Corruform is available plain, galvanized or vinylprimed for painting.

SPECIFICATIONS

Standard weight Corruform with 2 3/16 inch wide, 1/2 inch deep corrugations. Weight .72 lbs. per sq. foot. Guaranteed average strength of 100,000 psi. — single test minimum strength 95,000 psi.

GRANCO STEEL PRODUCTS
(*Subsidiary of* GRANITE CITY STEEL CO.)
Granite City, Illinois

SEND FOR FREE AIA FILE TODAY



LETTERS

is, then the architects will continue to lose this great market and the builder and John Doe will have to go to the draftsman for their plans.

I was an entrant in the recent NAHB-FORUM House Design Competition.

WILLARD FRANKL
Chico, Calif.

Sir:

Your NAHB competition was a huge success and congratulations to the fine winning design. I am glad to see merchant builders at last realizing the benefits of good design. While the 1st place design may work fine in the Northwest (the region for which it was designed), unless it were completely air conditioned it would be impossible in Dallas. I don't believe it was the intent of the competition for a builder to capitalize on the publicity afforded its winners at the expense of future owners who would buy, expecting the full benefits of contemporary design and finding themselves owning an improperly oriented house. . .

I am glad Mr. Tipps of Dallas (THE MAGAZINE OF BUILDING, Feb. 51, p. 31) likes the fine design, but I fail to see the logic in objecting to building Cape Cod in Dallas, and yet transplanting Seattle modern, good looking as it is! . . . Mr. Tipps missed the whole point of the competition—that an architect can design a good looking, commercially feasible house. Mr. Tipps would do well to hire a local architect or hire Mr. Walker to do a Texas house.

RIFF STIRMAN, *Designer*
Abilene, Tex.

Sir:

As an ordinary but, I hope, intelligent housewife and mother, I offer these criticisms of Bruce Walker's prize-winning small house.

First, a house without a second toilet is most unsatisfactory . . . if you could poll the average family, you would find that most people consider two toilets a necessity. . . .

Second, I cannot believe that many housekeepers would enjoy having the kitchen by the main entrance, especially with a large window that would allow anyone approaching the door a full view of the kitchen.

Third, a fireplace is greatly to be desired. . .

MARY WESTLAKE
Rowayton, Conn.

• Let Reader Westlake look again; the greatly-to-be-desired fireplace is there.—ED.

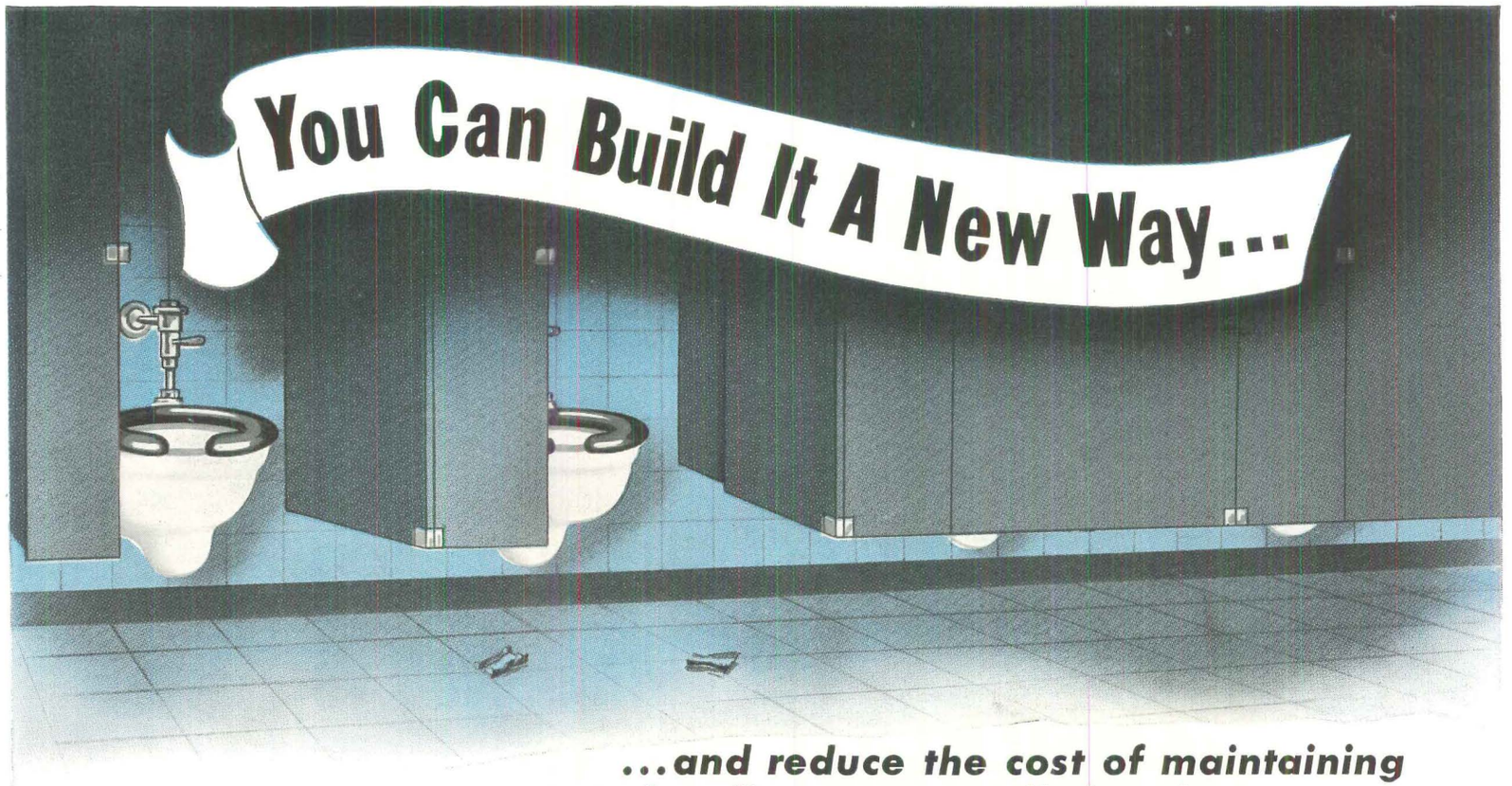
HOSPITAL COMPARISON

Sir:

I congratulate you for presenting the "Top Builder's" and "Top Architect's" hospitals (Feb. '50). I think that those who contributed to the creation also deserve to be commended for their many specific achievements.

However, in the case of the "Top Builder" hospital some of the "achievements" have ov

(Continued on page 57)



...and reduce the cost of maintaining cleanliness to an all-time low.

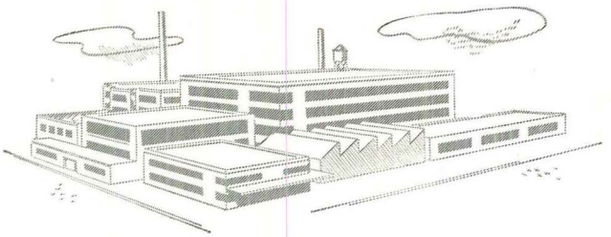
Immaculate cleanliness is no problem in rest rooms with fixture-bare floors—where plumbing fixtures are off the floor, because there is nothing to interrupt the sweep of the broom and the swish of the mop. Fixture-bare floors reduce the day-by-day dollar cost of maintenance to an all-time low while lifting sanitation to a new high. The New Way uses wall type plumbing fixtures installed the Zurn Way — the simple, fast, safe way to install wall type closets, lavatories, sinks and other fixtures. The New Way reduces the cost of building and gains more usable floor space and protects rest rooms against premature obsolescence. Insist on wall type plumbing fixtures in rest rooms of old and new factories, in schools, hospitals and every other type of building. Write for booklet entitled "You Can Build It (Cubic Foot of Building Space) For Less The New Way".

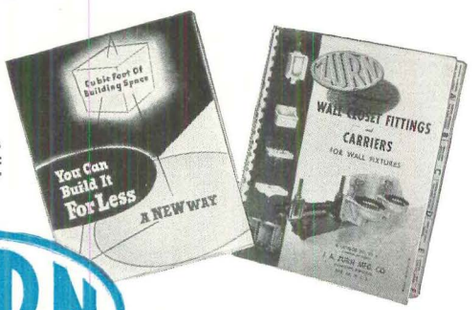


BUILD IT CUBIC FOOT OF BUILDING SPACE **FOR LESS**

The NEW WAY

Yes, for as much as 10% less! The New Way reduces the use of building materials, eliminates the necessity of suspended ceiling constructions to seal off drainage lines; it saves time and labor required for completing plumbing fixture installations. Insist on wall type plumbing fixtures installed with Zurn Wall Closet Fittings and Carriers.





Write for this booklet. It tells how "You Can Build It (Cubic Foot of Building Space) For Less The New Way".

J. A. ZURN MFG. CO. ERIE, PA. U.S.A.

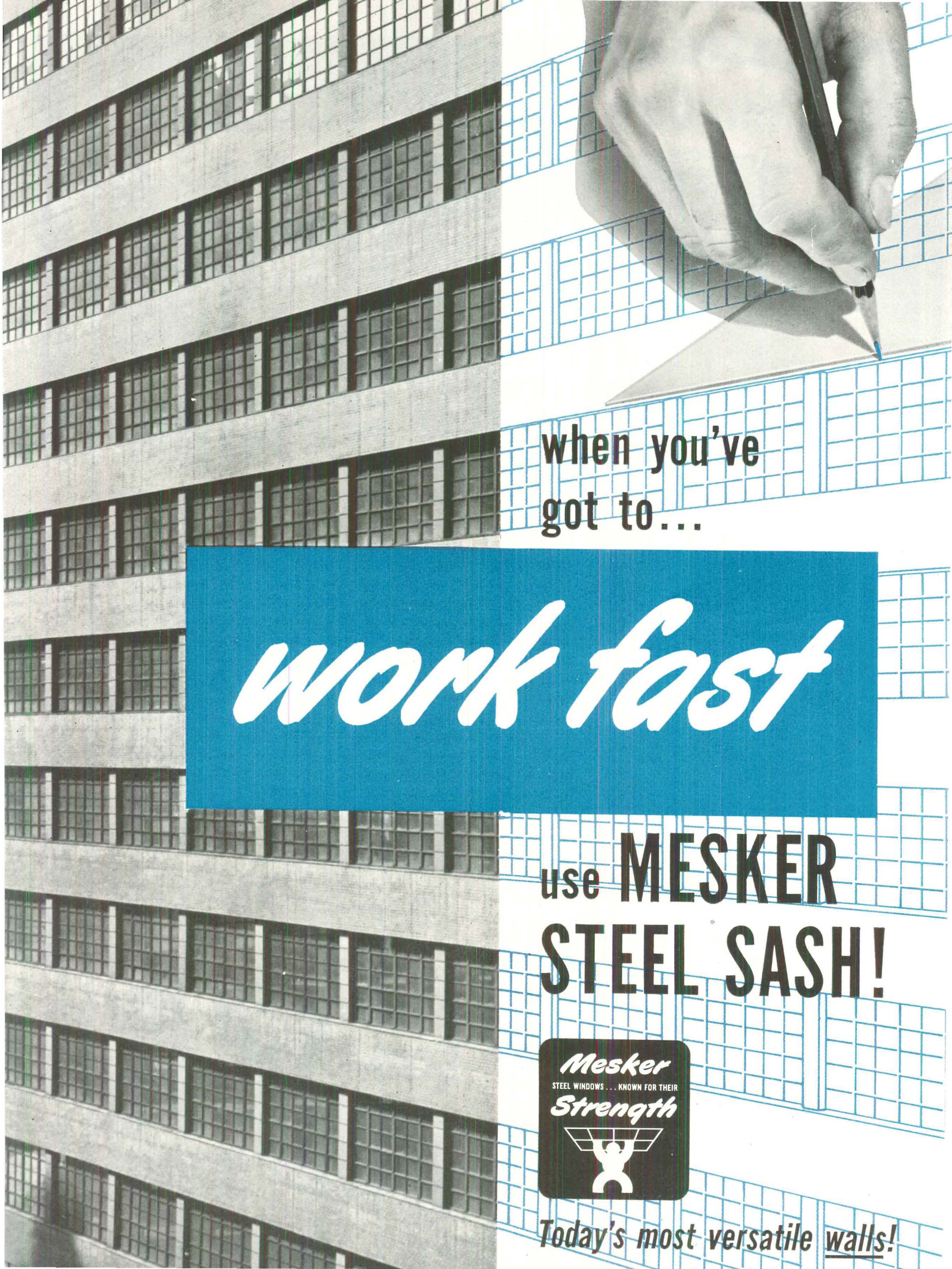
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Sales Offices in All Principal Cities

Pre-eminent Manufacturer of Sanitary Products for the Protection of Human Health and Modern Structures.

ZURN

The Zurn Carrier Catalog and Handbook describes the complete line of Zurn Wall Closet Fittings and Carriers for all makes and types of plumbing fixtures. Use it with Zurn Carrier Indexes and fixture catalogs to save time in selecting and specifying wall type fixtures.


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got to...
work fast
use MESKER
STEEL SASH!
Mesker
STEEL WINDOWS . . . KNOWN FOR THEIR
Strength
Today's most versatile walls!

TTERS

ched themselves. While 530 sq. ft. per bed is ly remarkable considering the accommoda- ns which have been accomplished, some of this ievement is derived from the fact that ends of ridors are used to house important functions. is not only shuts out light and ventilation from corridors (such light and ventilation are as portant in a hospital as medicine), but in ad- ion, it will be necessary to destroy services rly bought and replan adjoining spaces be- e the hospital could expand in the future.

Another direction in which the creators of the asterpiece" have overreached themselves is in ucing all finishes to cement, plaster and as- lt tile. That being so, the saving accom- shed with these finishes is apparently small as major saving seems to be in the conserved ce. However, because of this fleeting economy, hospital will be burdened for life with a very h maintenance cost. This, too, I submit, is se economy.

Mendelsohn's hospital is, of course, beautiful l his esthetics were achieved in spite of a nar- site. I assume that the architect used due sion to obtain a site where it would not be nec- ary to soar it into the air and to have so few ls per floor that one nurse would be obliged cover two floors. To quote Florence Night- ale, ". . . the nurse should never be obliged to t her floor" otherwise "the nurse is converted o a pair of legs."

ISADORE ROSENFIELD, *Architect*
New York, N. Y.

WN, DOWN, DOWN

Here is an outline of *American Residential chitecture* from the year 1900 to 1960.



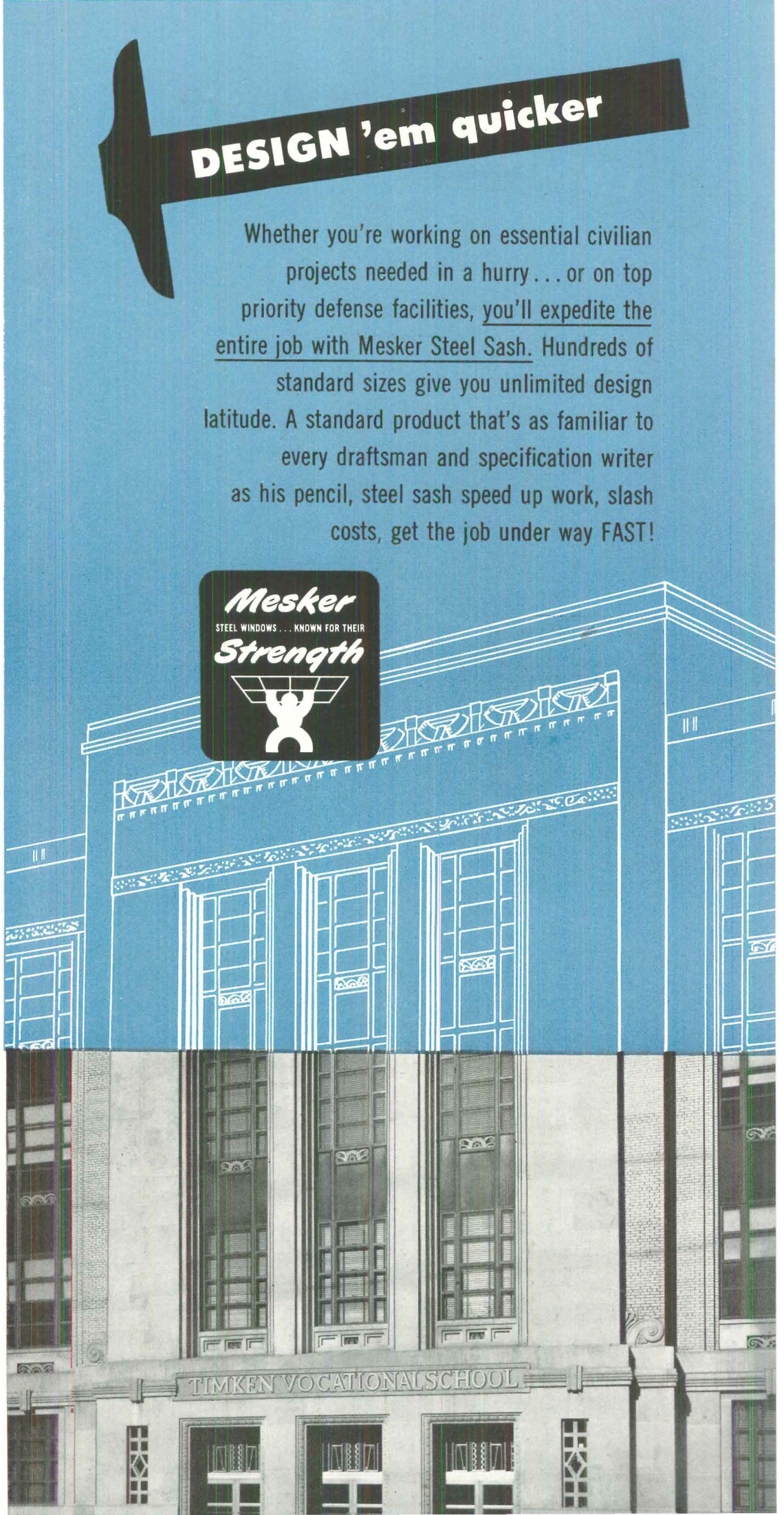
W. A. WOLLANDER & ASSOCIATES
Housing Consultants
Tacoma, Wash.

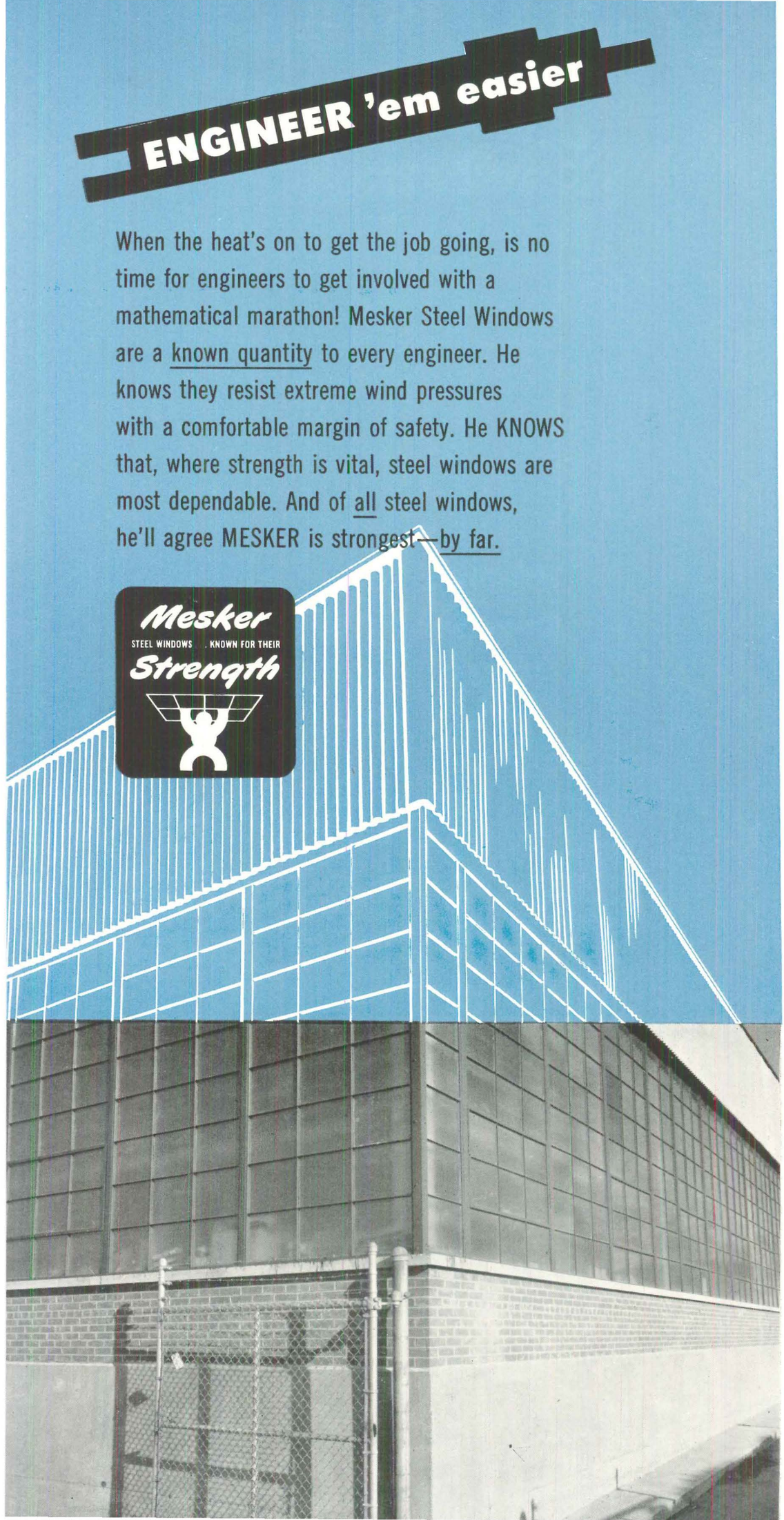
FICE BOY COLLABORATION

Whoever wrote the February article on the rristown hospital should be put in a corner n his face to the wall. Out of his anxiety to ce Builder Eken imposing, your reporter hid Architects Ely in the closet. You said: "Eken loaned two men to the architect's office to make sure that all details were worked out economical construction and to help write the cifications in builder's language." Only a ve man would not shrivel to read in an article ut his own work that it would be a "great day America" when "great builders like Andrew n get together with great architects like Eric delsohn."

think it's wonderful to have giants roam the h, but don't you think that you should save sort of language for Hollywood and the Ad- ising Club. And don't you think in a maga-

(Continued on page 58)





LETTERS

zine of architecture that the architect should least be given a decent burial?

It would seem to me that your article thru the builder forward as a planner, although I w taught that the builder was an entrepreneur also was taught that architecture and build was a social enterprise; that hospitals were bu for sick people, that they were staffed by phy cians and experts who were consulted in pl ning hospitals, that specialized mechanical en neers and structural engineers contributed th share, and that the architect put everything gether in a building—no small task. The arc tect is still the master-builder, and it's wrong put planning in the zone of theory and constr tion in the zone of practice. If the time shou come when the trained architect of today does qualify to plan a building, then an architect o higher order may take his place, maybe men l Eken, or Mendelsohn-Eken. That time has come yet. Until then, it would be well to consi the architect as the planner instead of the bui er's office boy.

MILTON FREDERICK KIRCHMAN, *Archi*
New York, N. Y.

• Nor should the builder be the architect's office b Close collaboration within an architect-builder te will produce better buildings.—ED.

SHORT BRICKS

Sir:

We have read with interests your January ticle entitled "Wanted: Substitutes the Buil Can Use." Our interest was particularly attrac to your statement that "there is no shortage brick and none is expected. . . . In the tile fi only glazed tiles have been short."

We think you are somewhat over-optimis We are one of the largest manufacturers of c products in the Southeast and are approxima six months behind on deliveries of all of our pr ucts. Furthermore, this situation has exis since early in 1950.

We wish to commend you for the continued cellence of THE MAGAZINE OF BUILDING. It ables our sales staff to keep up with the new ideas in architecture, and it is a source of p sure to all who read it.

W. A. REISER
Merry Brothers Brick & Tile
Augusta, Ga.

ARCHITECTS' SCORE CARD

Sir:

Perhaps it would be of interest to archit to know on what basis one individual famil nally selected an architect for their house. wife and I were confronted with four appare capable architects from which to choose. I is how we graded each architect and made final selection. We asked ourselves the follo ten questions:

In his work for others, do we like
His exteriors .....
His interiors .....
His site relationship .....
His caliber of clients .....

In his work for us, do we like
is approach to our problem..... 10
is openness to suggestions 10
is apparent personal interest 10
is fee and method of payment 10
In general, does he have
ppropriate experience 10
he time to do our job 10

100%

WILLIAM S. BALLARD
Topsfield, Mass.

AT OFF AND ON AGAIN

ir:

My hat off to your art department (see Belschi's church, THE MAGAZINE OF BUILDING, an. '51); but my hat back on again to American hoto-engravers who frequently spoil everything photographer may try to do.

PIETRO BELLUSCHI, *Dean*
School of Architecture & Planning
Massachusetts Institute of Technology
Cambridge, Mass.

PARTMENTS OBSOLETE?

ir:

My answer to Mr. Downs' question (THE MAGZINE OF BUILDING, Feb. '51, p. 107) is "apartents are not obsolete." When designed properly ey are economical to build and offer convenince which cannot be duplicated in a private ome. . . .

A 200-family development, each unit occupyng about 4,000 sq. ft., requires about 18 acres ith a land coverage of 16 to 20%. The same umber of families can be housed in a single uilding with about 2% land coverage. The balnce of the land can be used in many ways to ake living in the apartment attractive and interesting. Some 95% of the apartments, and this ncludes 2, 3, 4 and 5 room dwelling units, enjoy rough ventilation, automatic elevators, soundroofed bedrooms, incinerator, heat, hot water, tc. at no greater cost than the private house. . . .

CHARLES HENRY SACKS, *Architect*
Brooklyn, N. Y.

UDOS

ir:

Although for many years I have been a severe ritic of your approach to home building probems, I now commend you most highly for what eems to me a change in attitude.

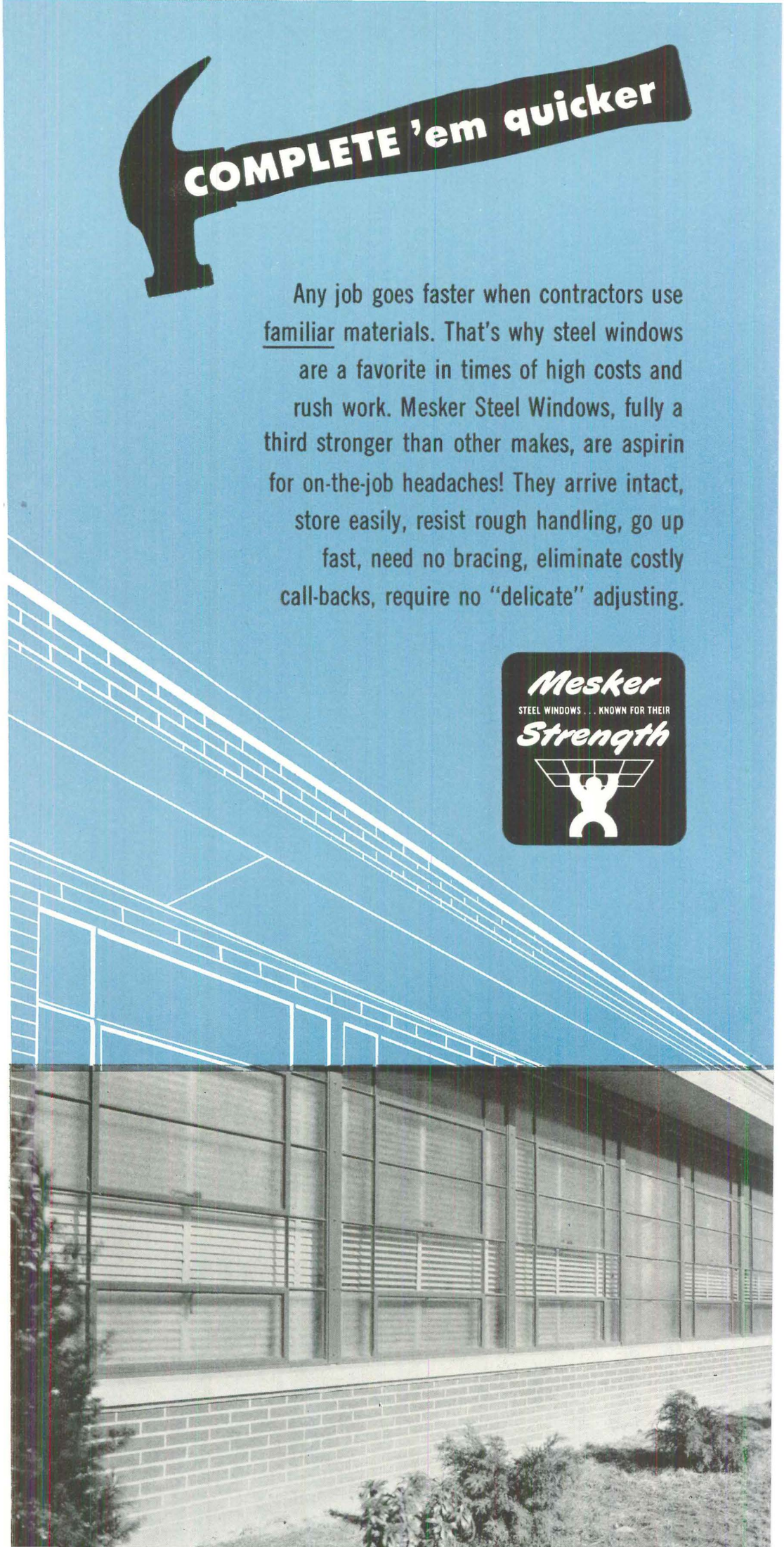
In our fight to preserve the industry from fedral encroachments and to improve our building chniques, we need a great deal of assistance. our magazine can be of tremendous help, and am sure it will be if it continues its present own-to-earth policy toward our industry.

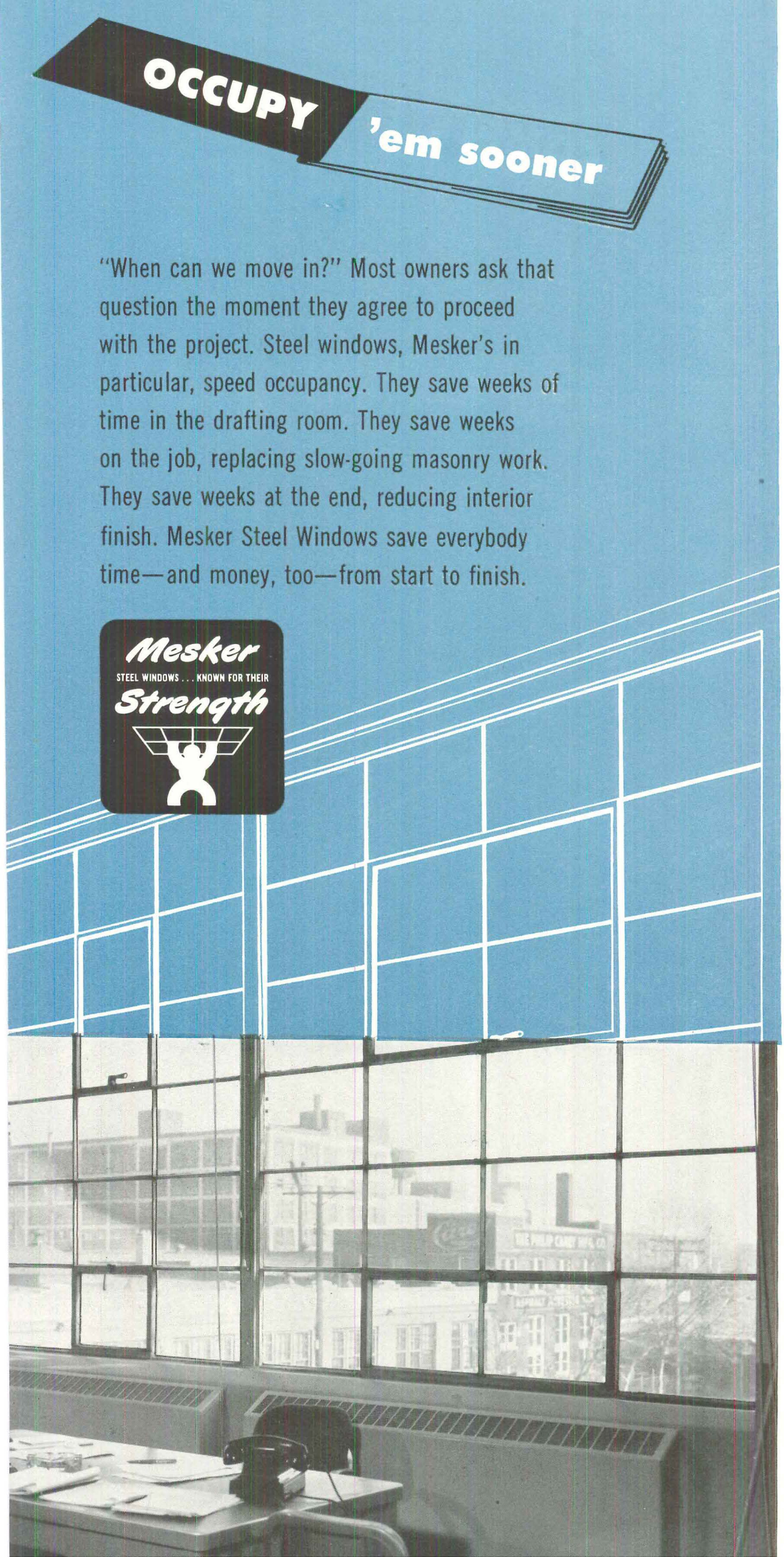
GEORGE W. MILLER, *President*
Miller Homes, Inc.
Detroit, Mich.

ir:

Sincerest compliments on your issue of January. It is an outstanding achievement in both

(Continued on page 60)





LETTERS

publishing and architecture.

Our copy has seen such hard use that it is dog eared already. Each time that it comes in for three-point landing on the library desk, it neve makes it. Another hand takes it in mid-air. . .

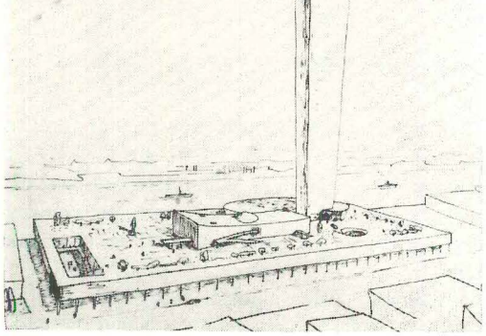
ERIK VON LALAU, *Directo*
Jackson-von Ladau School
Boston, Mass.

UN'S GLASS PRISM

Sir:

. . . Your article on the United Nations' build ing (THE MAGAZINE OF BUILDING, Nov. '50) wa a great stimulant for discussion and thinking. . .

The Board of Design's monumental solutio and Director Harrison's interpretation of the A sembly Hall seem perfect. Nevertheless, the cen tral monument did not have to be the "Secre tariat" but a "slender prism of glass and stee (or marble) to house the UN people" in a some



what more free form than the "cliché from th dead past and the dead present." It would for a harmonious group with the Assembly Hall present elegant shape, all placed, "amid land scaped gardens," on top of "a gigantic rectangle of the Secretariat (see cut).

JOHN S. FRANKOWSKI, *Archite*
Curitiba, Brazil

ERRATA

Sir:

In the Jan. '51 issue (p. 196) there is an ad vertisement by the Insulux Division of America Structural Products Co. in which this firm - Seelye, Stevenson & Value—is listed as the archi tects of International Business Machines Plan No. 2 at Poughkeepsie, N. Y.

It is incorrect because Seelye, Stevenson Value are not architects but consulting engineer

It is damaging to us because we are dependen on architects' good will for a large part of ou business and do not wish to appear as compet tors of architects. . . .

ELWYN E. SEELY
New York, N. Y.

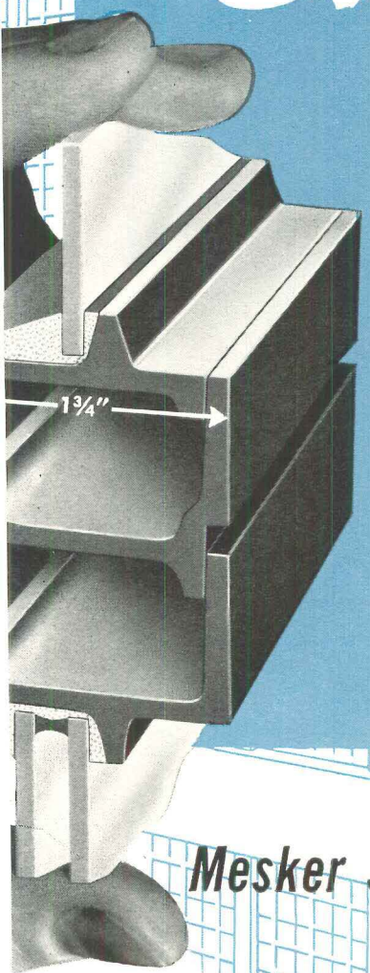
• In the January presentation of "Architect Su gestions for Builders" the detail credited to Law rence Perkins (p. 113) was actually designed b G. Holmes Perkins; and the creation of a "sens of spaciousness" in the bedroom by Archite Richard Neutra (p. 116) was done not with mirro set in the corner next to the window but by corner window of mitered glass.—ED.

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Mesker

STEEL WINDOWS . . . KNOWN FOR THEIR

Strength



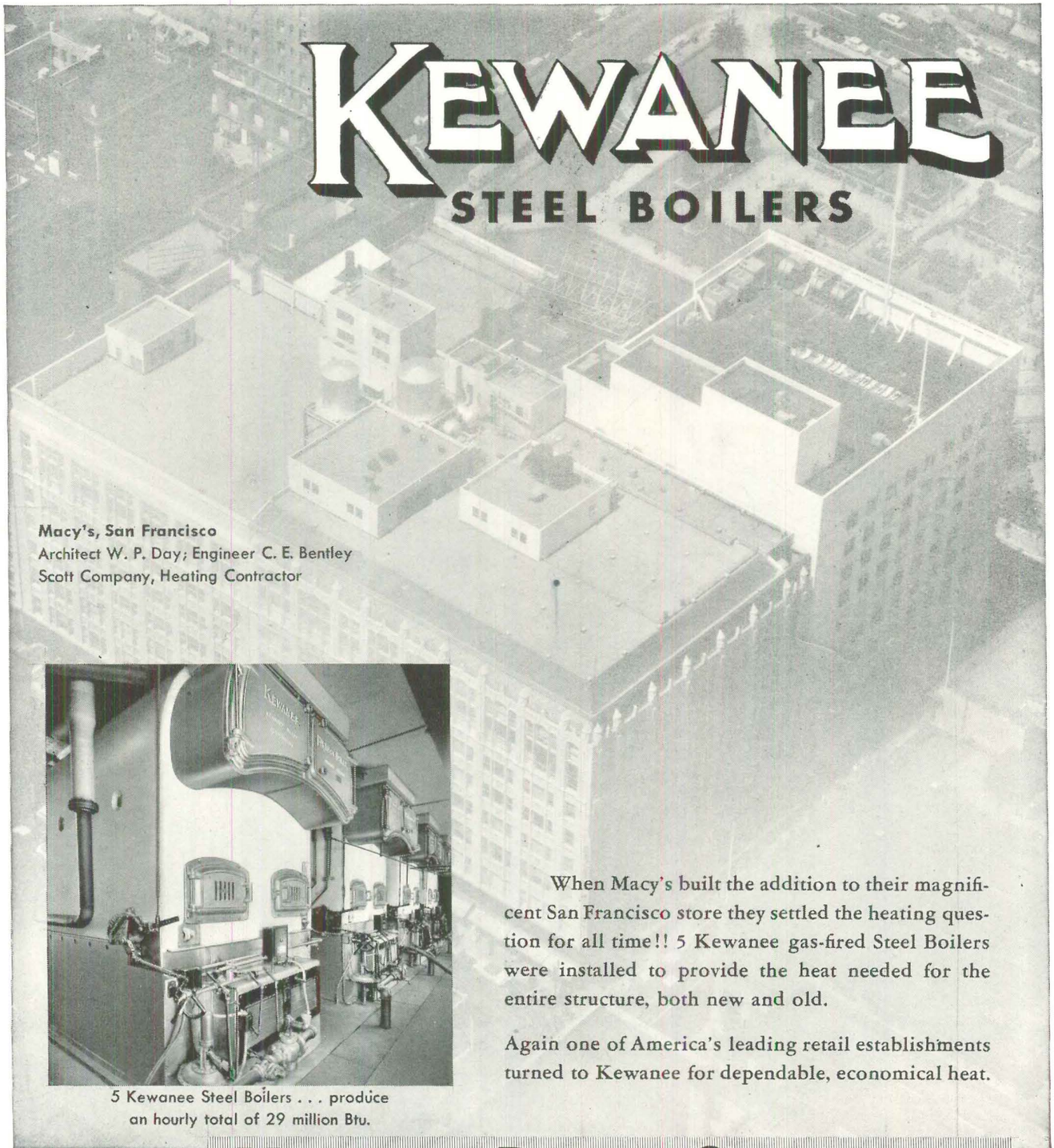
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Mesker
STEEL WINDOWS . . . KNOWN FOR THEIR
Strength

Macy's (SAN FRANCISCO) built an addition ...and switched to



Macy's, San Francisco
Architect W. P. Day; Engineer C. E. Bentley
Scott Company, Heating Contractor

5 Kewanee Steel Boilers . . . produce an hourly total of 29 million Btu.

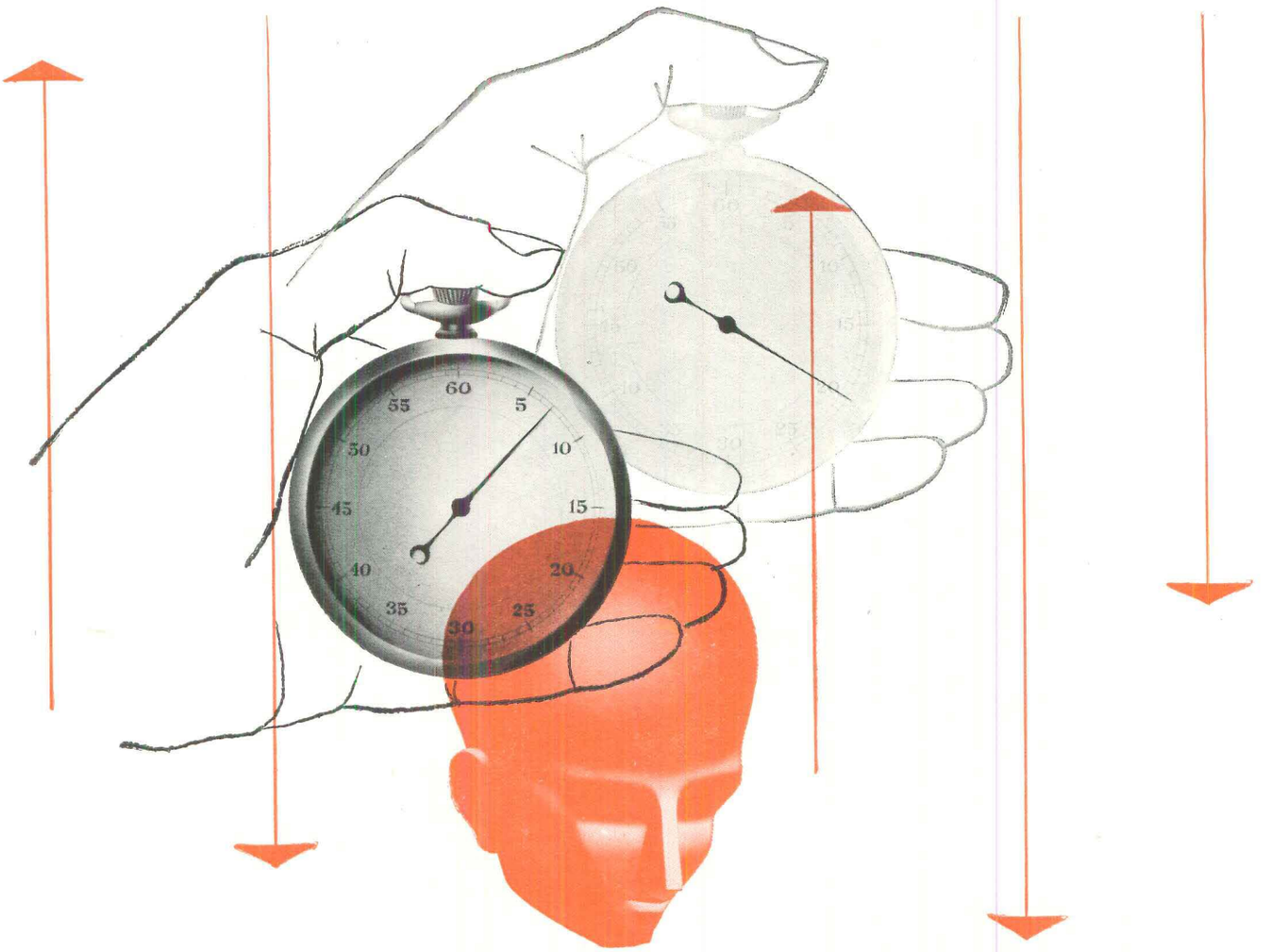
When Macy's built the addition to their magnificent San Francisco store they settled the heating question for all time!! 5 Kewanee gas-fired Steel Boilers were installed to provide the heat needed for the entire structure, both new and old.

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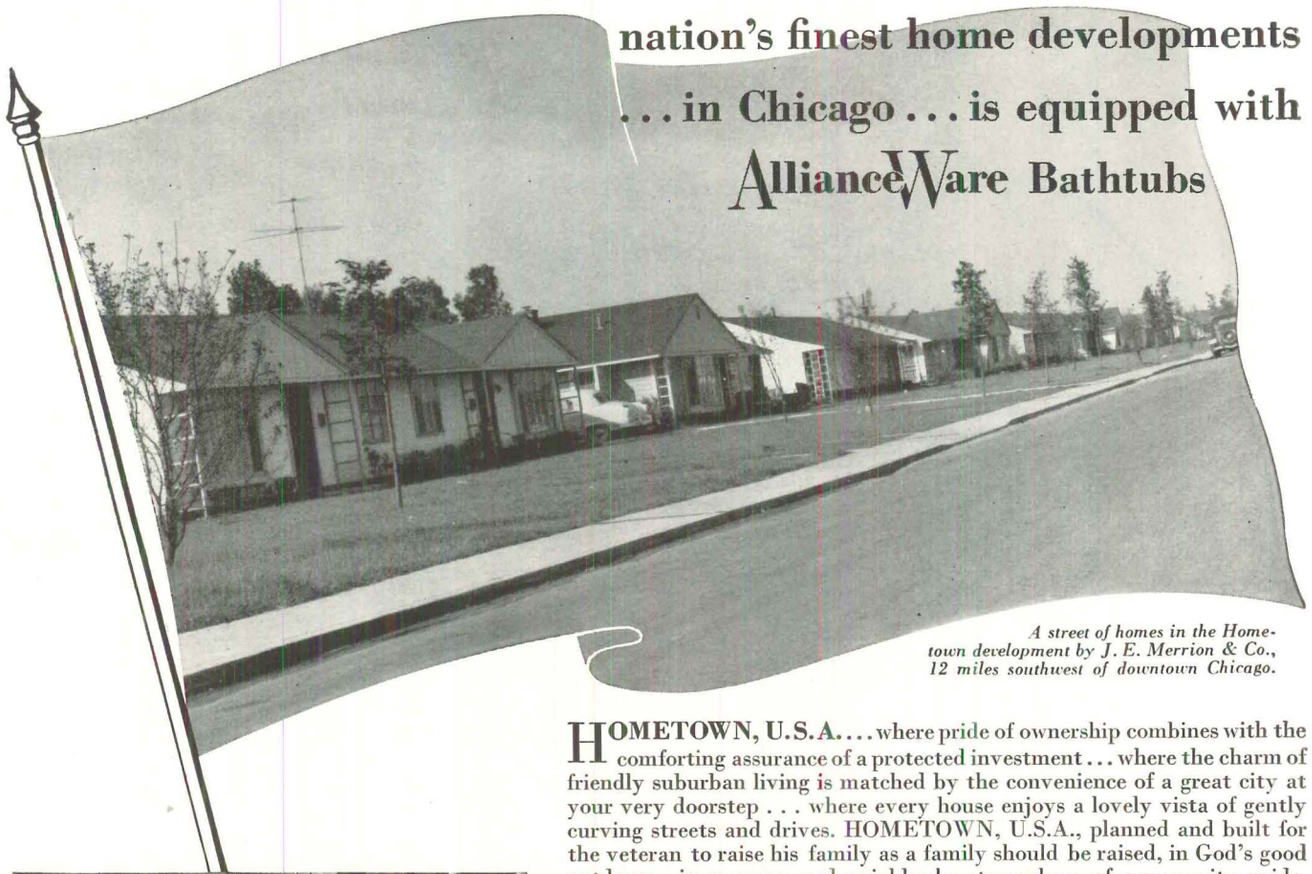
*Facts given on request.

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A street of homes in the Hometown development by J. E. Merrion & Co., 12 miles southwest of downtown Chicago.

HOMETOWN, U.S.A.... where pride of ownership combines with the comforting assurance of a protected investment... where the charm of friendly suburban living is matched by the convenience of a great city at your very doorstep . . . where every house enjoys a lovely vista of gently curving streets and drives. HOMETOWN, U.S.A., planned and built for the veteran to raise his family as a family should be raised, in God's good outdoors—in a warm and neighborly atmosphere of community pride.

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Your plumbing contractor will be glad to give you full details of AllianceWare, or write us for catalog sheets describing the complete AllianceWare line.



Bathroom equipped with an AllianceWare bathtub and an AllianceWare lavatory

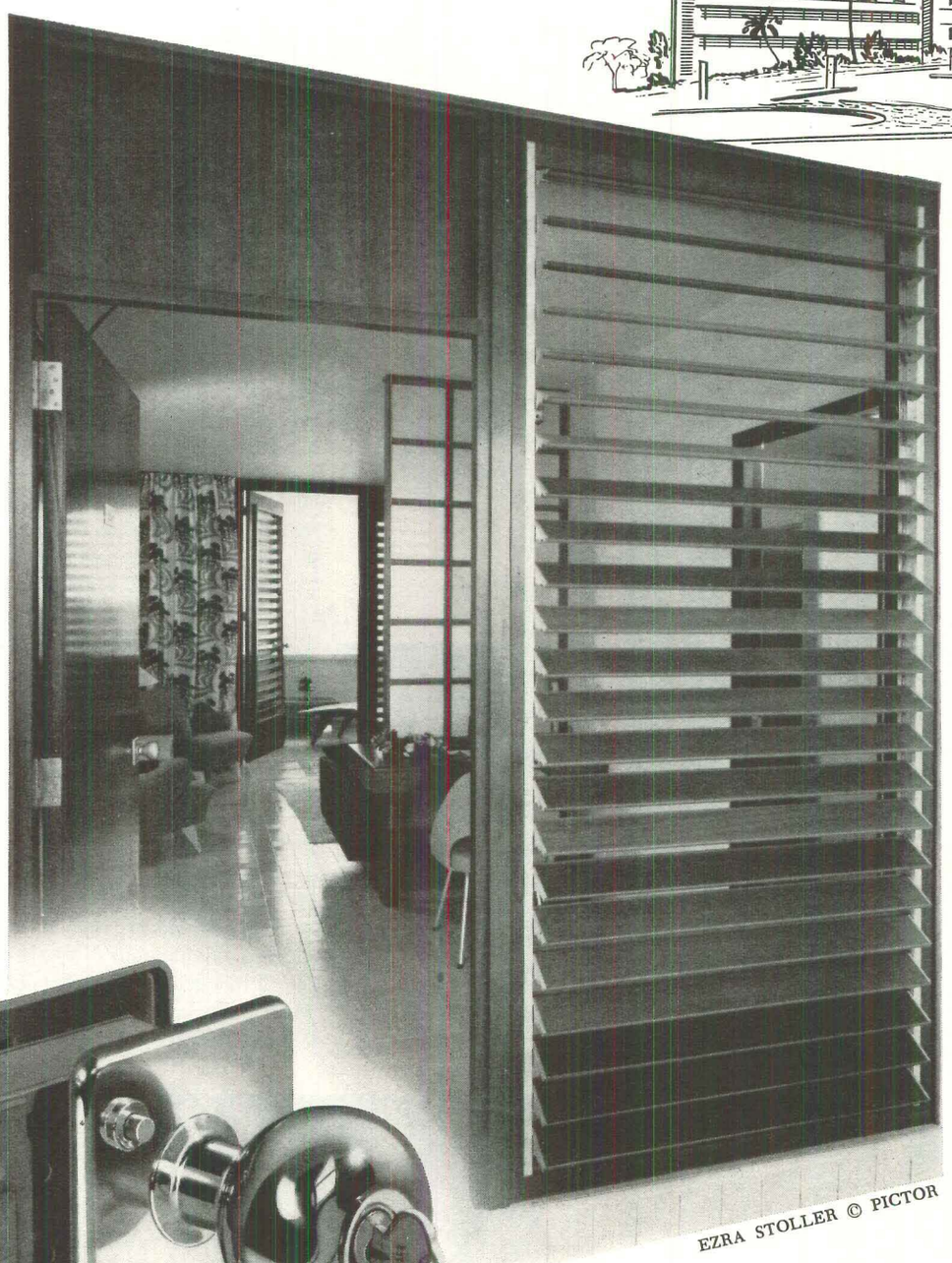
HOMETOWN is being erected by
J. E. Merrion & Company
Emil J. Minx, *Architect*

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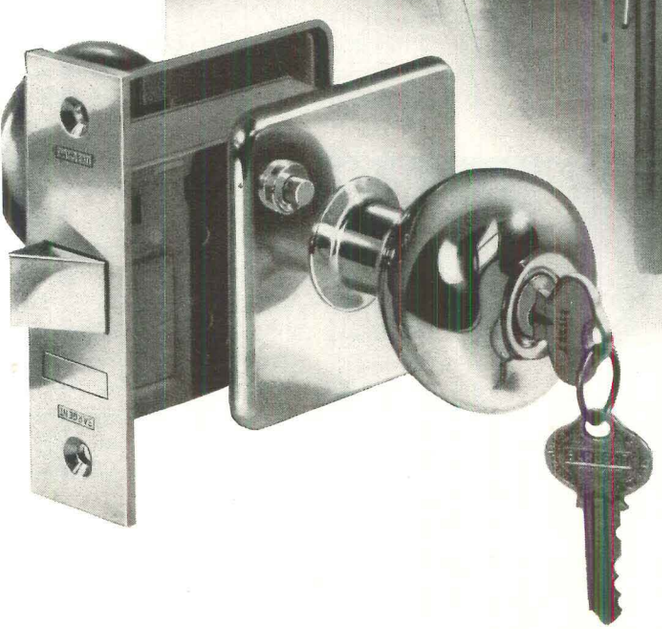
AllianceWare
PORCELAIN ON STEEL





EL PANAMA HOTEL
Management: *Kirkeby Hotels*
Architect: *Edward B. Stone*
Associate Architects: *Mendez and Sander*
Interiors: *Florence Bates Hayward*
Locks: *by Sargent*

EZRA STOLLER © PICTOR



Locks for El Panama

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A better lock by —

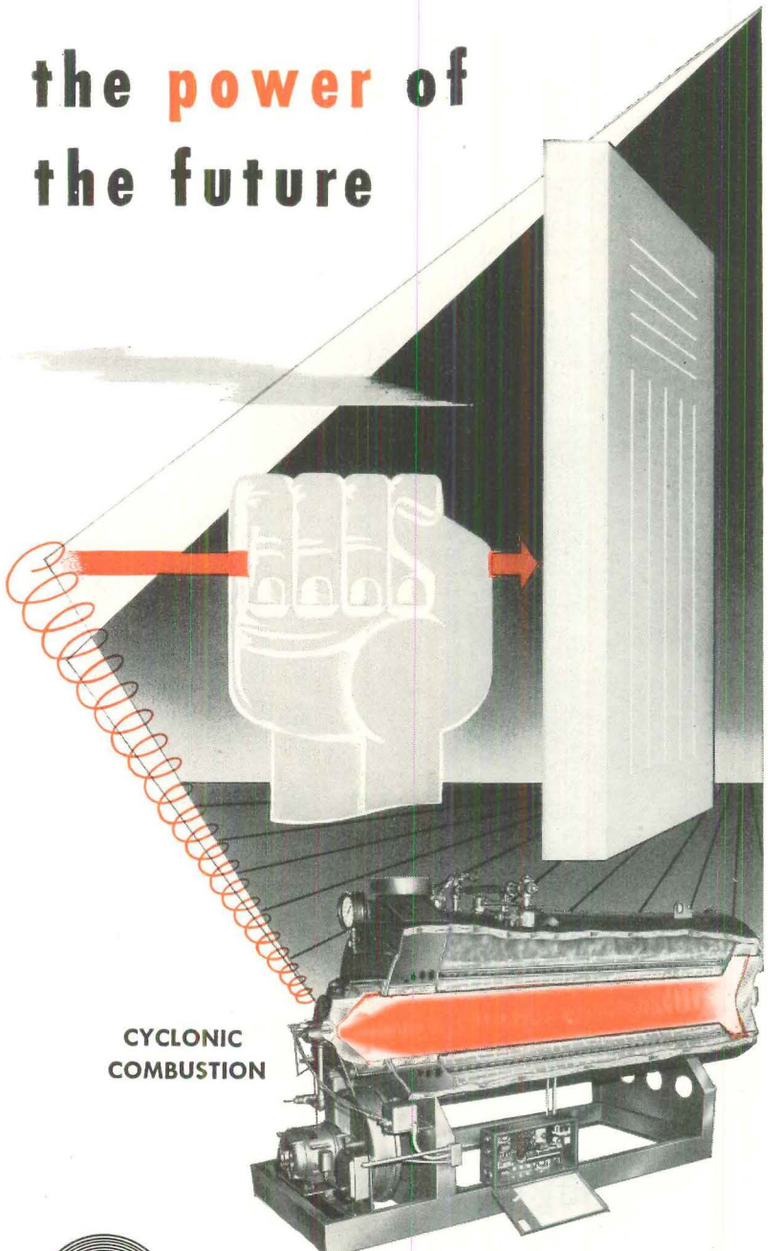
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BEHIND THE BLUEPRINTS



ROBERT CARSON and **EARL LUNDIN** are veteran office building architects, having worked on the Rockefeller Center designs from preliminary sketches to completed buildings. They have been partners since 1939, are resident architects for the Cen- ter, have also nurtured a busy practice that pro- duced two major postwar office buildings in New York City, and a third, the best of the year, in Tulsa, Okla. (p. 104).



JACK HILLMER is a born Texan and a 1941 gradu- ate in architecture of its state university. During World War II he migrated west to join a design group at San Diego's Consolidated Aircraft Corp. helped develop the giant B-36, often calls on his bomber-building background to solve house de- sign problems (e.g. the Ludekens House, p. 110). Drawn by the city's architectural temperament Hillmer opened a San Francisco office in 1946 intersperses practice with teaching design at the University of California's School of Architecture



Able, affable **EDWARD D. STONE** has won more than 10 awards, scholarships and medals in the course of his distinguished career in architecture. Since establishing individual practice in 1935 he has developed such prize-winning designs as the A. Conger Goodyear House on Long Island, the Museum of Modern Art and the latest beauty, El Panama Hotel (p. 138). Stone is a native of Arkansas and an honor graduate of Harvard and MIT's architectural schools. Associated with him is architect-nephew Karl J. Holzinger, Jr., tal- ented young alumnus of the University of Illinois and Taliesin. Octavio Mendez and Harold W. Sander, Panama City architects, collaborated with Stone's office on El Panama's design.



PRESTON STEVENS and **JAMES WILK- INSON** are partners in a 32 year old architectural firm known as Burge, Stevens until Flippen Burge's death in 1946. Stevens is a Georgia Tech alumnus, was one of the firm's found- ers. Wilkinson is an Alabama Poly- tech graduate, came to Burge & Stevens in 1931, became an associate four years later. The pres- ent organization planned $20 million worth of buildings in its Atlanta office last year, including two noteworthy schools in Georgia and Alabama (p. 160).



Philadelphia engineer **CHARLES S. LEOPOLD** gra- uated from the University of Pennsylvania in 1917, has had his own consulting office for 3 years. A heating and air conditioning speciali- he has engineered the cooling of such vast stru- tures as Washington's Pentagon Building, the U. S. Capitol and New York's Madison Squa- Garden. His latest work in the field of pan and air cooling is presented on page 166. Leopo- is an avid researcher, has written several pape on allergy, smoke control and varied aspects thermodynamics.

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For work on the bench, it is a simple matter to remove the complete starter unit. Note that the *unit door remains on the panel* so that it can be closed to guard the exposed bus. Rigid guide rails in the structure facilitate replacement of the starter unit. These rails align the starter and steer the "Magna-Grip" stab connectors into accurate contact with the power bus.

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For example:

Complete baffling to localize unusual arcing if faults occur.

Interrupting capacity of each starter not less than 15,000 rms amps.

Self-cooling construction for foolproof ventilation.

Sturdy structures that are self-supporting.

Get all the facts as presented in booklet B-4213 from Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-27008

DESIGN TESTED AND VERIFIED IN THE Westinghouse HIGH POWER LABORATORY

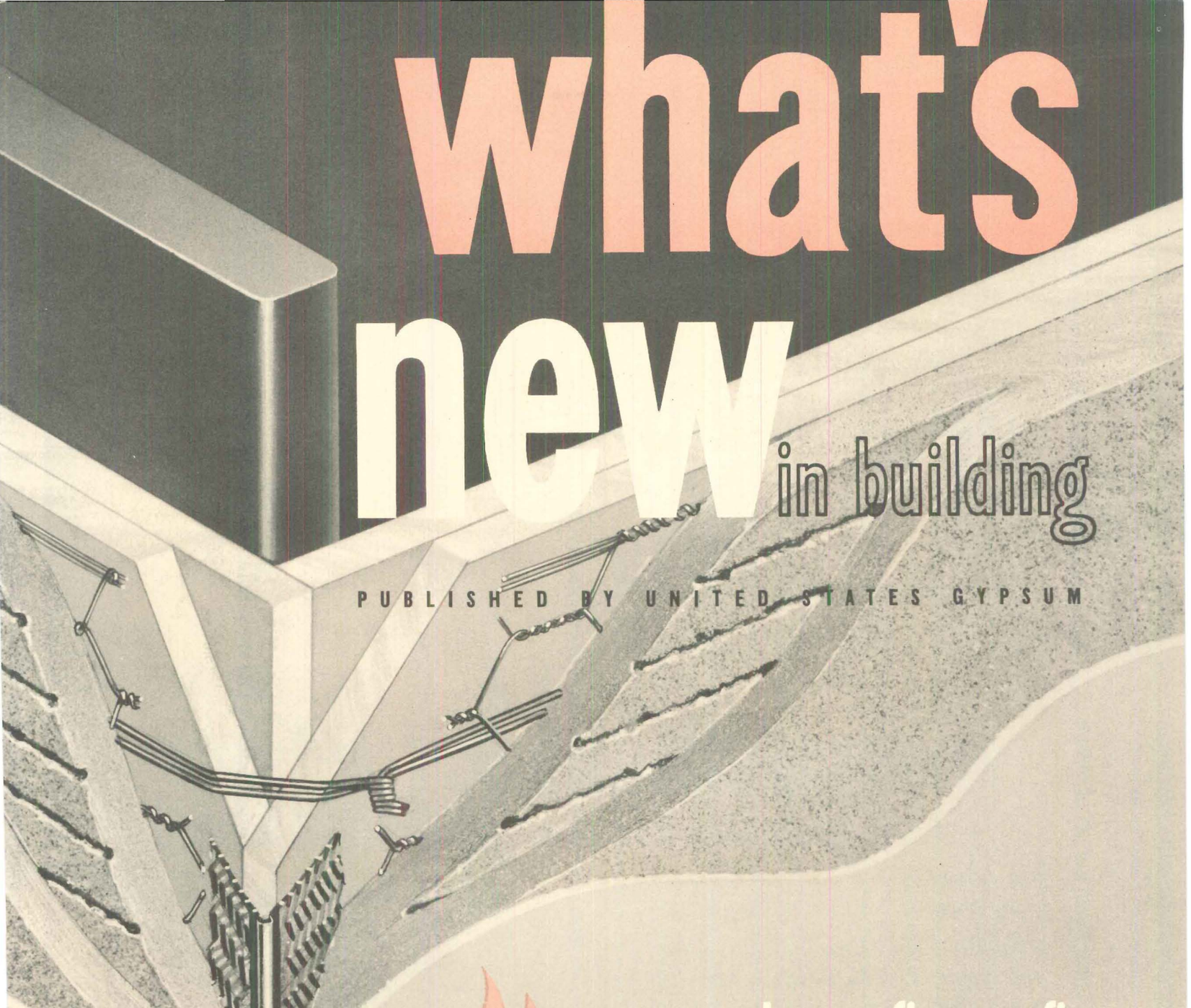
YOU CAN BE SURE.. IF IT'S Westinghouse

CONTROL CENTERS

WESTINGHOUSE

what's new in building

PUBLISHED BY UNITED STATES GYPSUM



Latest development in column fireproofing



ROCKLATH
*T. M. Reg. U. S. Pat. Off.
plaster base

Applied without spacers: saves labor, plaster; brings protective gypsum in contact with steel of columns.

For 3- or 4-hour ratings, two layers of ROCKLATH are applied, then wrapped with 1-inch, 20-gauge hexagonal wire mesh.

PLASTER plus PERLITE

Gypsum plaster to complete the "wall of fire protection" . . . perlite aggregate for light weight. (For one-hour rating, sand may be used

Perfectly timed to solve some of today's most critical building problems is a new method of fireproofing steel columns with ROCKLATH and plaster. It makes use of materials in ready supply. It is speedier than any other method. Saving plaster as well as man hours, it effects important building economies. Flexible in application, various plaster thicknesses provide fire ratings of from one to four hours (tests were completed recently at the National Bureau of Standards). For corresponding ratings, it weighs approximately half as much as tile and one-fourth as much as normal concrete, thus permitting important savings in structural steel.

Detail and specification sheets on fireproofing columns with ROCKLATH and plaster are available from Dept. 140, United States Gypsum, 300 W. Adams St., Chicago 6, Ill.

...AMERICA MUST CONSERVE STEEL FOR ALL-OUT NATIONAL DEFENSE PROGRAM

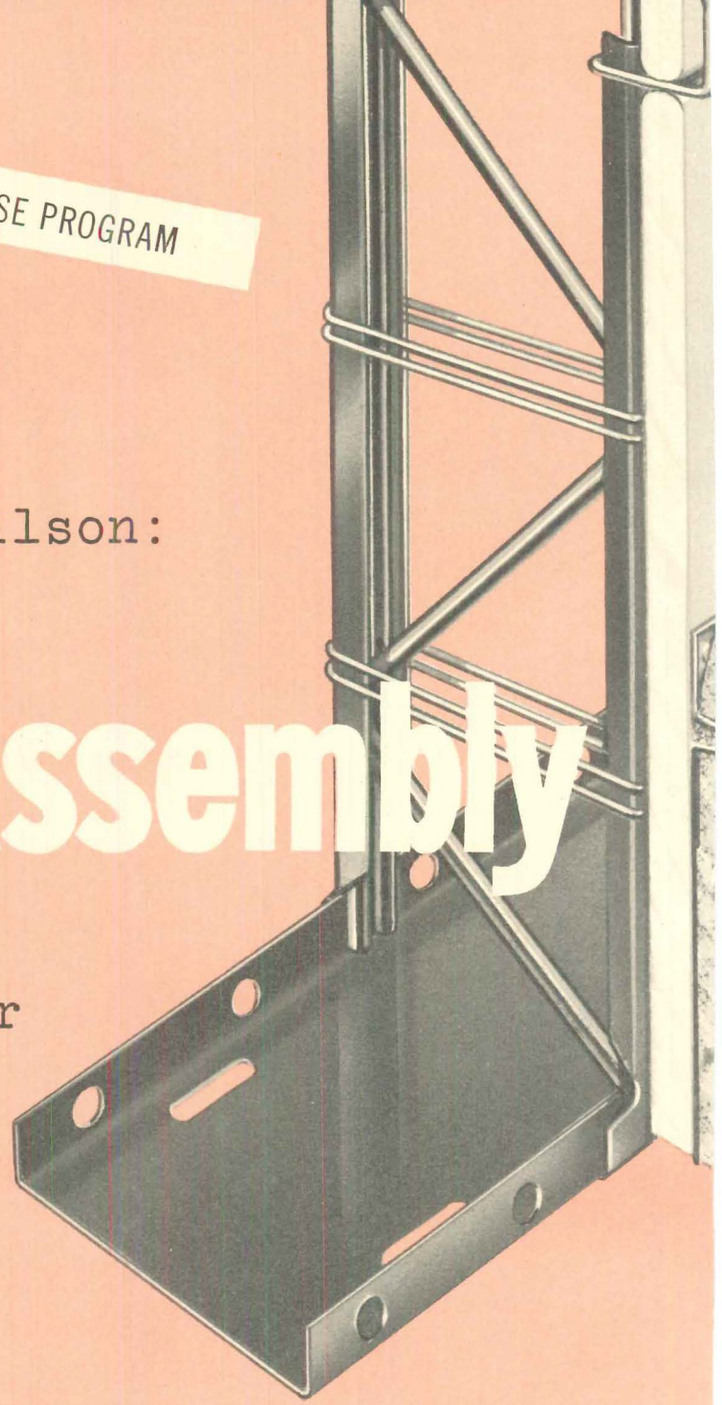
C. E. WILSON...CO-ORDINATOR

Here's one answer, Mr. Wilson:

new

partition assembly

is big steel saver



It saves critical materials . . . saves man power . . . saves time . . . saves building expense!

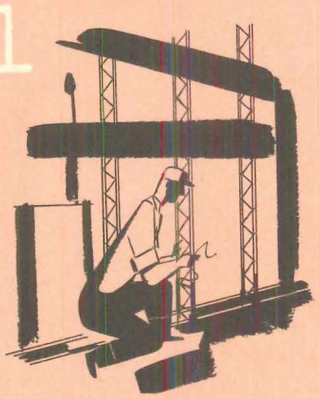
It's the new non-load-bearing partition assembly developed by United States Gypsum—one of the latest building systems to come out of this company's imaginative and practical research.

Permitting four different overall wall thicknesses, from 4½″ to 8″, the new partition assembly meets practically any job requirement. A typical 5¼″ installation offers a one-hour fire rating and a sound-transmission loss rating of 46.5 db. The assembly conceals pipes, conduits, air ducts. And although light in weight, it's exceptionally strong.

Best of all, it meets the needs of today's defense program, saving steel through the use of ROCKLATH Plaster Base with TRUSSTEEL* STUDS. In addition, its lighter weight may, in many cases, permit the use of less structural steel.

And it really goes up fast—as the sketches at the right clearly indicate.

1



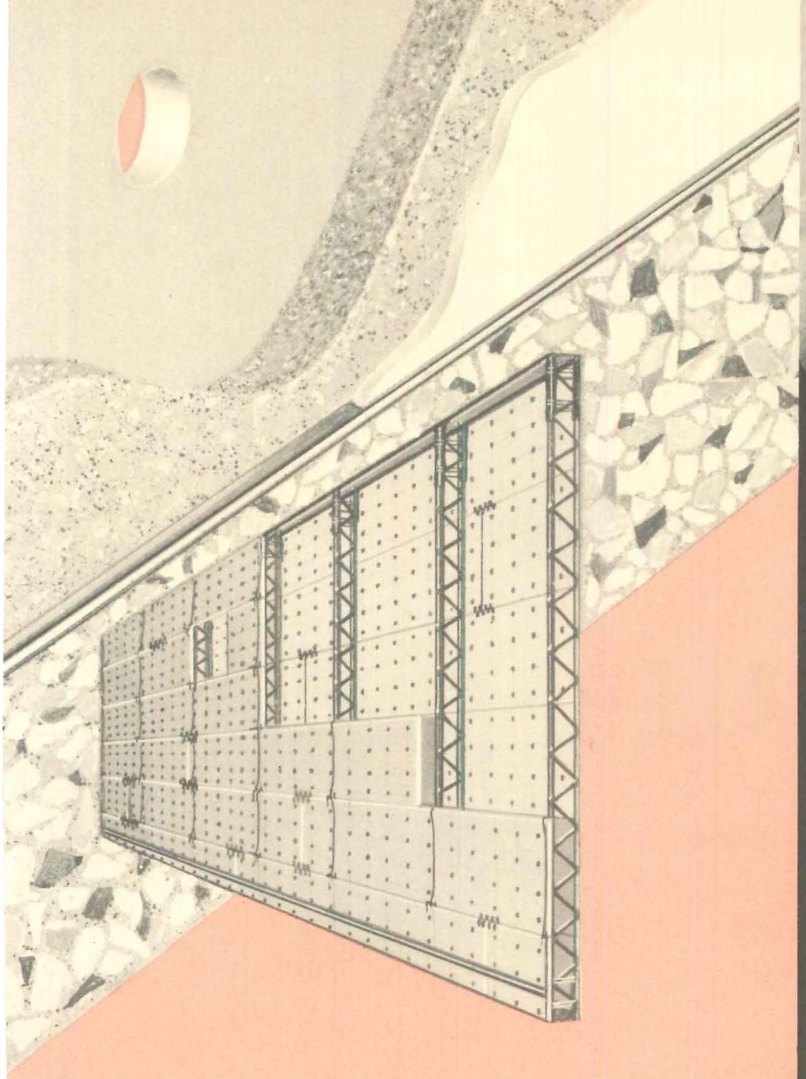
TRUSSTEEL Studs are erected in standard manner, requiring no special skills or tools.

2

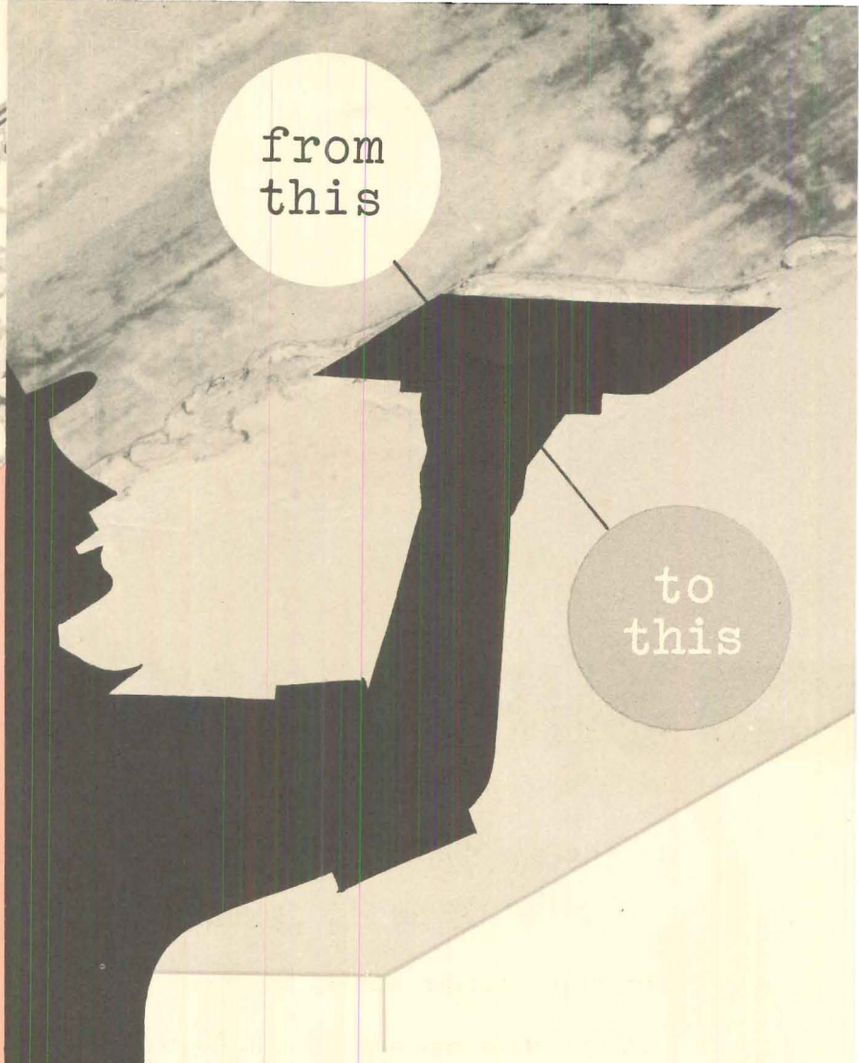


Either Plain or Perfor
ROCKLATH, the fireproof gy
lath, can be used as plaster

*T. M. Reg. U. S. Pat. Off.



from this



to this

in one thrifty step

new concrete finish

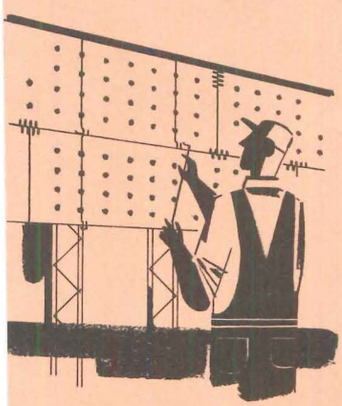
Now at last—a finish plaster that *bonds securely to smooth concrete!* No bush-hammering, buffing, spackling; no white coat necessary. No more need for costly furring, lathing or conventional base coat on smooth concrete ceilings. Now released by U.S.G. after two years of field testing, new RED TOP* Cover Coat is a specially prepared gypsum finishing plaster for use only on smooth, unpainted concrete ceilings, columns and beams. Quick-mixing and easy-troweling, Cover Coat is applied in one or two coats over a special neutralizing bonder to a total thickness of not over ⅛"; one ton covers 300-500 yards. Eliminating form laps and other imperfections, it provides a finish surface ready for decorating with oil, oil resin or casein paint.

*T. M. Reg. U. S. Pat. Off.

RED TOP COVER COAT

FINISHING PLASTER

The RED TOP* basecoat plaster should be followed by famous IVORY* Finishing Lime combined with RED TOP Gauging to complete the architectural design and provide a superior base for any interior decoration.

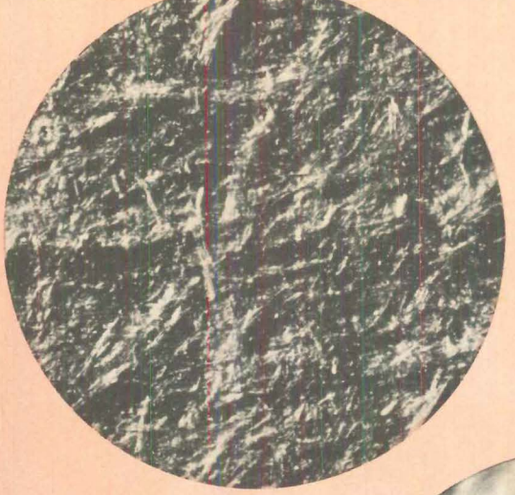


ROCKLATH is attached to the
ds quickly, easily, permanently,
the BRACE-TITE Clip System.

4



Fireproof, strong, versatile, RED TOP Gypsum Plaster makes the ideal basecoat.



a

b



new SHEETROCK SEALER

microscope shows how SHEETROCK Sealer lays the nap on any gypsum wallboard

It's finer, better, surer, six important ways:

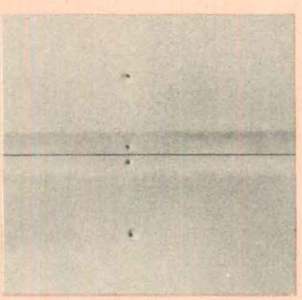
1. Lays face paper nap
2. Prevents asphalt spotting
3. Easy and ready to use
4. Controls suction
5. Highly pigmented
6. Provides "tooth"

No doubt about it—this new sealer really lays the nap on gypsum wallboards. The micro-camera in photo "A" (magnification, 15 diameters) reveals the heavy nap and raised fibers of the face paper—inherent in all gypsum wallboards.

Now study picture "B" (magnification, 15 diameters). The nap and fibers are neatly laid down to stay, ready for any spirit-thinned paint or enamel—or for wallpaper.

Remember its five other advantages, too—six important advantages in all to give you better decorating with spirit-thinned finish coats.

For the ideal painting surface, on any gypsum wallboard...



Channel formed by recessed edges of gypsum wallboard, ready to receive PERF-A-TAPE* Cement.



Cement "buttered" into chann PERF-A-TAPE reinforcement imb ded, covered with two finish coa



SHEETROCK Sealer lays face paper nap *and equalizes suction* over both paper and joint cement.



Result: ideal dry-wall surface any spirit-thinned paint or ena —or for wallpaper.

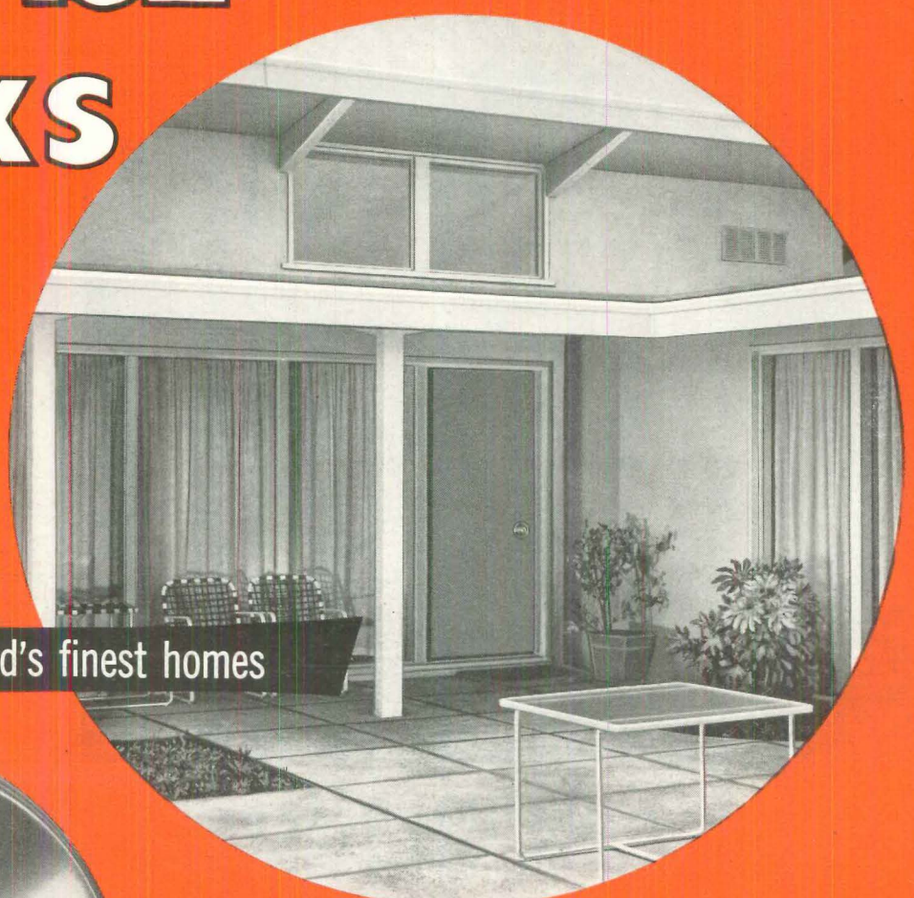
*T. M. Reg. U. S. Pat. Off.

USG UNITED STATES GYPSUM

United States Gypsum

For complete information and specifications on products described in these pages, or on *any* of the hundreds of USG products for building, consult your U.S.G. Architects' Service Representative, or write: Architects' Service Department, United States Gypsum Company, 300 West Adams St., Chicago 6.

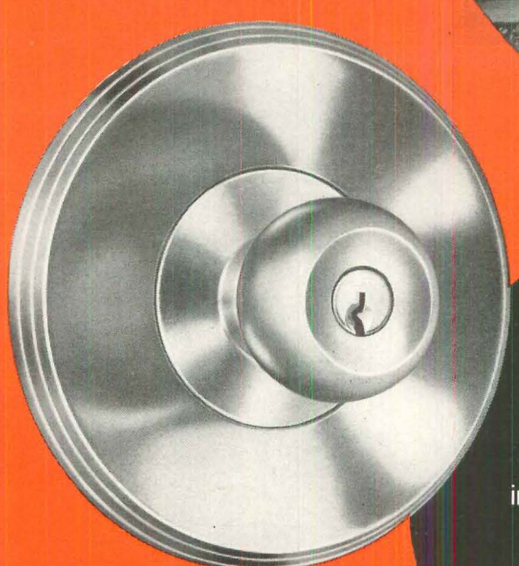
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LOCKS



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Architect: Edwin A. Wadsworth
Builder: David A. Bohannon Organization



Schlage Saturn Design with Riviera Escutcheon

Schlage Locks...selected for the 1950 Pace-Setter Homes because Schlage Locks are the highest achievement of the lockmaker's skill, and Schlage Modern Designs have been the pace setters in the lock industry . . . for over 25 years.

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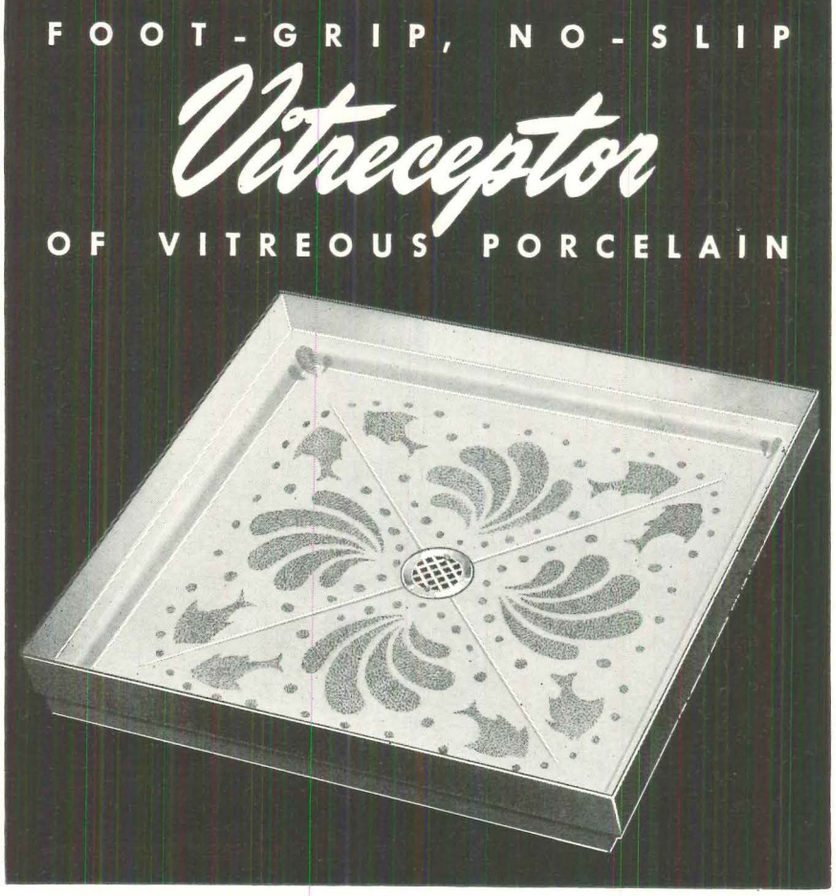
SCHLAGE LOCK COMPANY
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WEISWAY

FOOT-GRIP, NO-SLIP

Vitreceptor

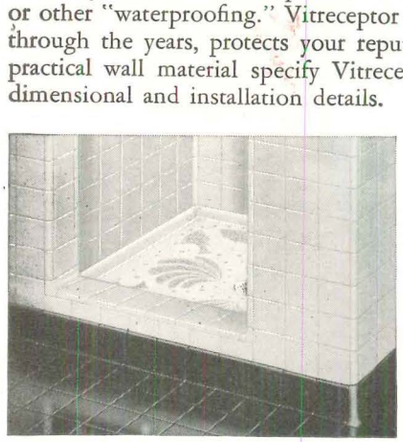
OF VITREOUS PORCELAIN



A Better Receptor for Stall Showers with Walls of Tile, Marble, Glass, etc.

For beauty... for safety... for absolutely leakproof service at the most vital points in shower construction... specify the Weisway Vitreceptor. The textured sea shell pattern in a neutral tone on lustrous white harmonizes with any color scheme. Foot-Grip, No-Slip floor is safe, wet or dry, non-absorbent, easy to keep clean and sanitary.

Formed in one piece, of 14-gauge enameling iron, with vitreous porcelain finish inside and out, Vitreceptor has no dirt-gathering joints, nothing to crumble away. No metal underpans or wall flashing are required, no messy mastic or other "waterproofing." Vitreceptor *stays leakproof*—assures client satisfaction through the years, protects your reputation. For better stall showers with any practical wall material specify Vitreceptor. Write for new catalog folder with dimensional and installation details.



Protection at Vital Points

Adjoining finish wall materials are enclosed within a continuous rim which is an integral part of the Vitreceptor body. This feature provides a positive wall flashing and assures a leakproof meeting joint, whether the wall material is tile, as in the illustration at the left, glass, marble, etc.

HENRY WEIS MFG. CO., INC., 402 WEISWAY BLDG., ELKHART, IND.

EXPLODED:
THE BIG BOMB SHELTER IDEA

Dispersed and prefabricated, small shelters of cast concrete will save more lives and dollars than the subterranean community shelters now planned by civil defenders—a timely argument by Paul DeHuff*

The fallacious idea that large, centrally located community bomb shelters would protect our populace from modern bombs of the atomic and hydrogen type has swept the nation. Civilian defense agencies at all levels have been urging and planning them. They are pictured by their advocates as affording the last word in civilian protection. And well they might, for nothing yet advanced by our ostrich-thinkers could provide such entrapped means for mass-suicide.

One need not be a city planner, a nuclear physicist or a structural engineer to explore and thus explode the possible deadly disadvantages of the large, mass bomb shelter. We need only recall some of the past's great mass catastrophies—both above and below ground—to foretell the tragic results which customarily follow panic and intense congestion. We need only to visualize, step by step, what would happen to people suddenly converging on and occupying in great number these underground lethal chambers.

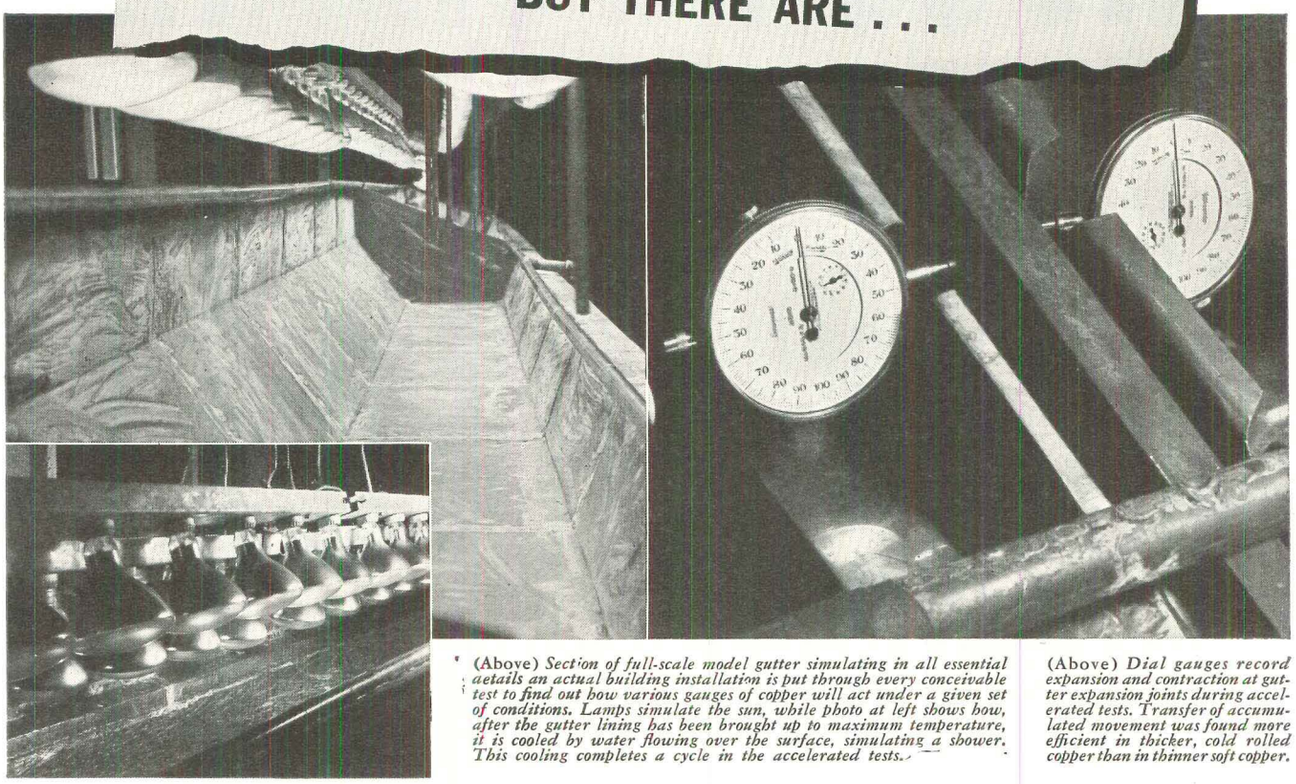
Underground garages: for cars, not people

Let us suppose, for illustration, that such a large underground enclosure as San Francisco's Union Square garage, in the very heart of any community, were designated and prepared for emergency use as a human shelter in the event of a bomb attack. To be of any protection whatever under a direct bomb hit, its roof would have to be of such depth and construction as to resist the terrific depth of penetration of modern bombings. Of course such armor-like materials as steel and concrete would provide some measure of protection. But to provide such armoring against direct

(Continued on page 76)

* A production engineer, Paul DeHuff of San Francisco, Los Angeles and Portland bases his bomb shelter arguments on a big background of practical experience in the construction field. He was chief coand methods engineer on the construction of the Army's $30 million Navajo Ordinance Depot which included 800 bombproof, igloo-type ammunition shelters. He has served on the Mayor of Los Angeles Disaster Council and as chairman of Los Angeles Chamber of Commerce's Small House Research Committee. He has developed numerous improvements in concrete construction (some of which have been reported in THE MAGAZINE OF BUILDING—Dec. '38 and Mar. '39). He is the author of various technical articles published in the industry press and co-author of California's contractor's license law.

THE USES OF COPPER MAY BE LIMITED BUT THERE ARE . . .



(Above) *Section of full-scale model gutter simulating in all essential details an actual building installation is put through every conceivable test to find out how various gauges of copper will act under a given set of conditions. Lamps simulate the sun, while photo at left shows how, after the gutter lining has been brought up to maximum temperature, it is cooled by water flowing over the surface, simulating a shower. This cooling completes a cycle in the accelerated tests.*

(Above) *Dial gauges record expansion and contraction at gutter expansion joints during accelerated tests. Transfer of accumulated movement was found more efficient in thicker, cold rolled copper than in thinner soft copper.*

NO LIMITATIONS

on Revere Copper and Brass Research and Revere Technical Advisory Service

• Restrictions, or no restrictions, Revere Research will be doing business as usual . . . testing, perfecting and improving products and techniques, working to make even better, more efficient products for the future.

Actually, the limitations on copper for civilian uses and the filling of D.O. rated orders will probably result in *more* work for Revere Research Laboratories and Revere Technical Advisory Service.

For users of Revere Products will be wanting to know how they can stretch their allotment of materials in order to get the most out of them. Revere will welcome such inquiries; be only too glad to work with you on your problems; give you the benefit of its knowledge gained from a century and a half of working with metals.

For the newest in flashing installation techniques ask the Revere Distributor about the Revere-Simplex Reglet System* for flashing Spandrel Beams and Revere-Keystone Thru-Wall Flashing*. He also will advise you of the availability of these materials, and put you in touch with Revere's Technical Advisory Service in the event you wish to discuss your technical problems.

**Patented*

REVERE 150th YEAR OF SERVICE TO AMERICA

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THIS TIME... there need be

NO HOUSING SHORTAGE

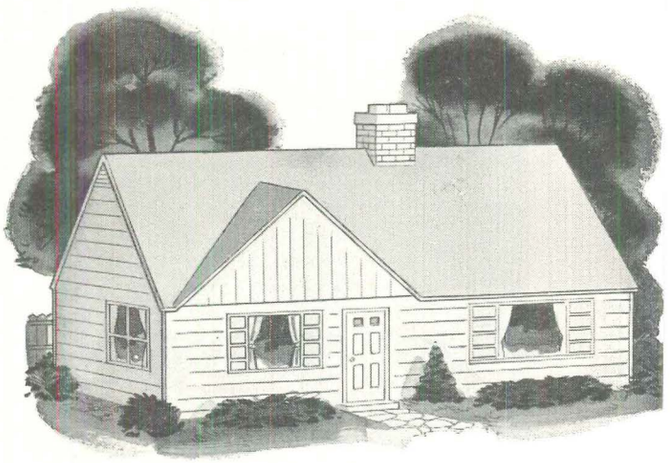
AN OPEN LETTER TO HOUSING OFFICIALS

Ten years ago, as our country mobilized for defense, the building industry was faced with the tremendous problem of providing shelter for the army of workers and fighting men. Shelter was provided --but only after long periods of acute housing shortage in critical areas.

THIS NEED NOT HAPPEN AGAIN...Enlightened building leaders see the advantages of prefabrication and are urging full use of the production facilities of this industry. These leaders advise that housing needs be surveyed and housing orders rushed to keep pace with new and expanded industrial and military construction.

To prevent delays, to insure full use of the new and expanded plants and military installations, we recommend that all Government agencies and housing officials everywhere use the SPEED, ADAPTABILITY AND ECONOMY (in man-hours, in vital materials) which prefabrication provides.

James R. Price, President
Prefabricated Home
Manufacturers' Institute



LOOK TO PREFABRICATION FOR COMFORTABLE, SUBSTANTIAL HOMES

Prefabricated housing can promise:

- Speedier manufacture and erection.
- Savings in vital materials through planned engineering and mass purchasing.
- Fewer man-hours, lower production and erection costs.
- Lower delivered price per square foot.
- Nation-wide dealer service organization for service and maintenance.
- Quality construction that meets all mortgage lender's standards for FHA-VA insured loans.

Institute members can offer qualified builders both single and multiple dwelling units in quantity for erection during 1951.

Institute members reserve the right to pass on eligibility of applicants.

PREFABRICATED HOME MANUFACTURERS' INSTITUTE · phmi ·

PREFABRICATED HOME MANUFACTURERS' INSTITUTE

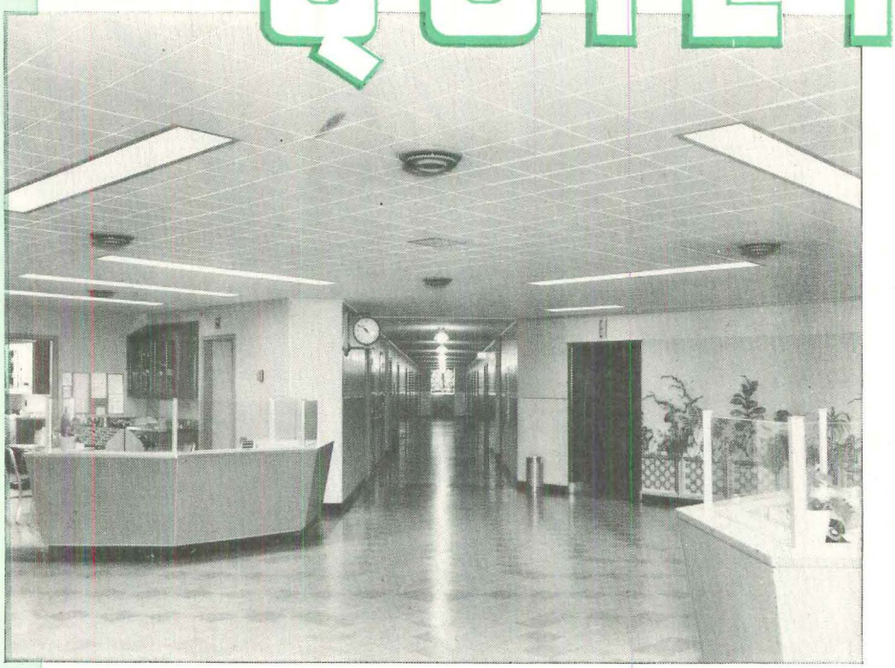
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We're keeping this QUIET

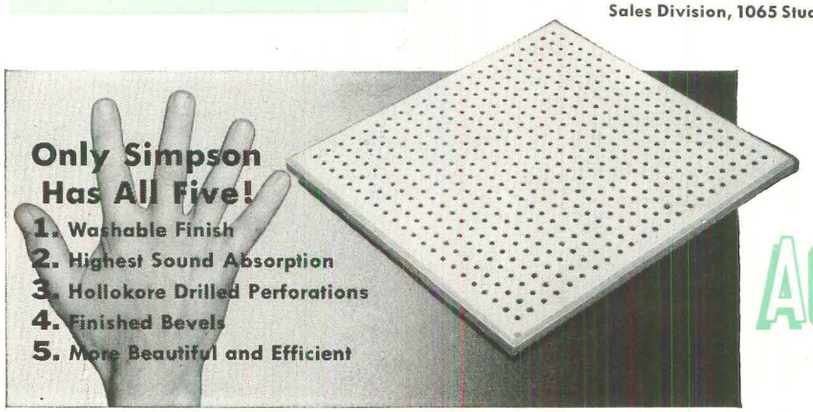


Truett Memorial Hospital, Dallas, Texas. Thomas, Jameson and Merrill, architects. Simpson Acoustical Tile installed by the Blue Diamond Company, Dallas.

SIMPSON ACOUSTICAL TILE helps keep it quiet in the new Truett Memorial Hospital in Dallas, Texas. This fine acoustical material was selected to control noise in the dining room, corridors, elevator lobbies, nurses' stations, operating rooms and therapy rooms because of its high sound absorption and attractive washable finish. Simpson Acoustical Tile is "keeping it quiet," too, in many other hospitals, stores, offices, libraries, schools, restaurants and homes throughout the country.

This sound conditioning material is preferred by architects and owners everywhere. *Only* Simpson offers all five outstanding features listed below. For *better* sound conditioning specify Simpson Acoustical Tile.

SIMPSON LOGGING COMPANY
Sales Division, 1065 Stuart Building, Seattle 1, Washington

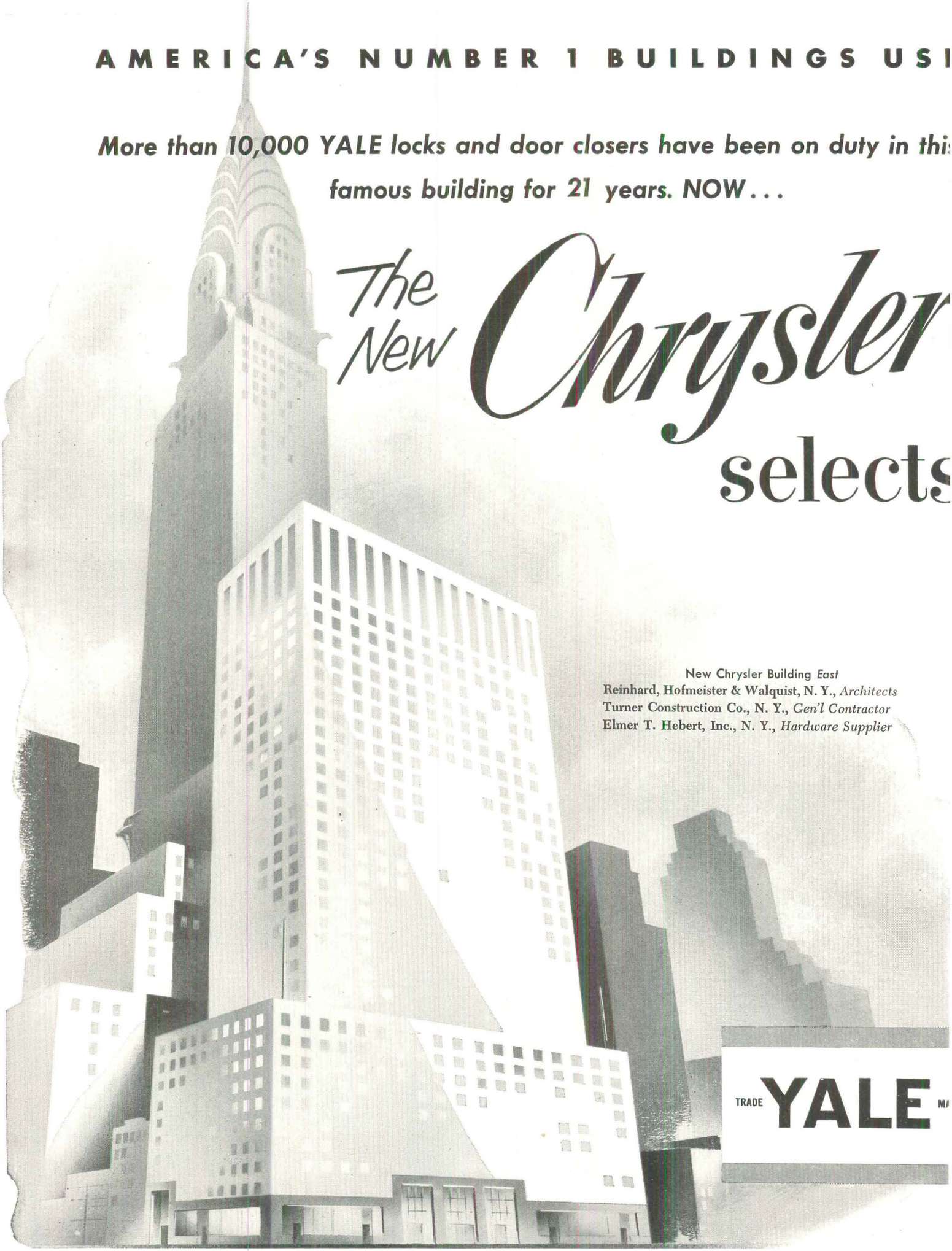


Simpson
QUALITY SINCE 1895
ACOUSTICAL TILE
For Better Sound Conditioning

AMERICA'S NUMBER 1 BUILDINGS USI

More than 10,000 YALE locks and door closers have been on duty in this famous building for 21 years. NOW . . .

The New Chrysler selects



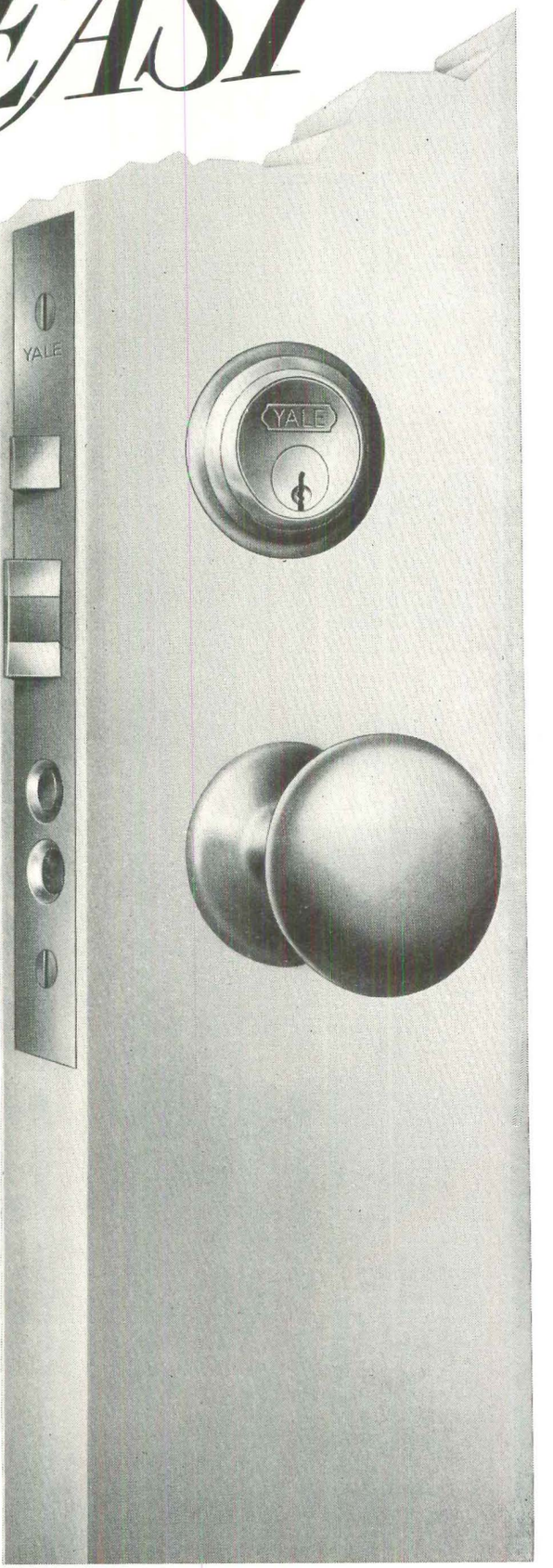
New Chrysler Building *East*
Reinhard, Hofmeister & Walquist, N. Y., *Architects*
Turner Construction Co., N. Y., *Gen'l Contractor*
Elmer T. Hebert, Inc., N. Y., *Hardware Supplier*

TRADE YALE MA

MERICA'S NUMBER 1 HARDWARE

Building EAST

YALE hardware



YALE builders' hardware wins the specification on another important job—the new Chrysler Building *East!*

But only after passing the toughest test of all—*actual service* (21 years of it)—in the original Chrysler Building, one of America's biggest and busiest.

During this "trial" more than 10,000 YALE locksets and door closers demonstrated again and again the qualities that make YALE famous—paid such steady dividends in convenience, security and maintenance-free operation that the choice of YALE for the new Chrysler Building *East* was almost automatic.

Here's real evidence that YALE builders' hardware produces long-run satisfaction—satisfaction that you can easily specify. Let your YALE hardware distributor or consultant help you on the next building you plan. For specific information on any hardware problem, just write us, Dept. S-64 at the address below.



A FULL-TIME "DOORMAN" AT EVERY DOOR!

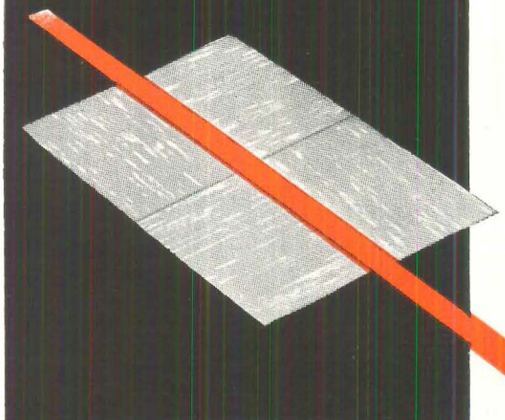
For a beautiful, modern building; beautiful, modern door closers—the new, streamlined YALE COMPACT DOOR CLOSERS. Modern in engineering as well as appearance. Quick, quiet, and firm in action. Easily reversible, installed in minutes. Built for a lifetime of efficient service with practically no upkeep.

YALE 8656. Gives excellent security for doors opening inward or outward because of small latch which deadlocks latchbolt. Bronze front and bolts. Annealed gray iron case. Key changes practically unlimited.

HE SIGN OF A FINE BUILDING

THE YALE & TOWNE MANUFACTURING COMPANY

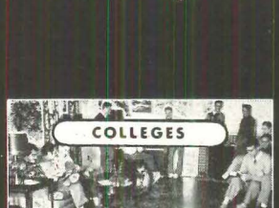
Stamford, Conn. *(In Canada, St. Catharines, Ont.)*



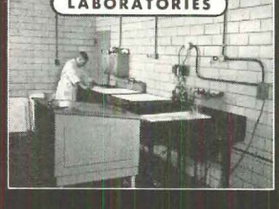
PLASCOR

Acid-Resistant Flooring

For Floors Where Beauty and Quietness are Desirable But Chemical-Resistance and Long Life Are a MUST









Every architect runs into the problem—maybe it's the chemical building of a college, or an industrial laboratory; it could be an ocean going ship, or a new defense plant; it might be a hospital.

"We want a floor that's acid-proof and durable, but it's got to be quiet, comfortable, and good to look at, too."

The best solution to that problem—in fact, just about the only solution—is **PLASCOR.**

PLASCOR is a flexible floor tile made from Tygon vinyl plastic and resin-dipped cork, ⅛" thick, in 8½", 11", 17" and 34" squares, and companion top-set 4" high cove base. It's installed like asphalt or rubber tile.

PLASCOR laughs at most chemicals. It should. Vinyl plastic is known for its chemical-resistance. Oils, greases, most acids and alkalies, cleaning agents, etc. leave it unmarked.

It's a tough combination to beat—Tygon vinyl plastic and cork. There's long wear there . . . . extra long wear. There's chemical-resistance no other resilient floor tile can match. There's beauty, too . . . gorgeous colors. And the cork content makes Plascor as quiet and comfortable to walk on as new grass.

No, Plascor's not as expensive as you might think. You'll be surprised how little this much better flooring costs, installed.

When your client says "the floor must be beautiful, quiet, comfortable, durable, and acid-resistant"—specify **PLASCOR.**

U. S. STONEWARE

Since 1865 • Akron 9, Ohio

HEAVY DUTY FLOORING

U. S. Stoneware has the answer to heavy duty acid-proof floors, too. "U. S." Acid-proof floors have built up performance records covering 20, 30, even 40 years of trouble-free service.

Wherever corrosive conditions are severe, and traffic heavy, in metal working or chemical plants, in dairies or slaughter houses, in distilleries or breweries, "U.S." Acid Brick and Durisite Acid- and Alkali-Resistant Cement rate No. 1 in performance and low cost.

We'll be happy to send you samples and other information on request. Write to

THE U. S. STONEWARE CO.
PLASTILE DIVISION
AKRON, OHIO

41C

BOMB SHELTERS

hits would entail construction costs and depth design far beyond any such structure existing or planned.

Assuming, however, that such a shelter had actually been built to withstand direct bombing, we have then a large subterranean area well filled for most of the 24 hours with automobiles and permeated with their by-products —gasoline vapors and poisonous carbon-monoxide fumes. Suddenly the warning sirens scream the alert. Our military and scientific leaders tell us that there will be only precious minutes—possibly seconds—between the enemy's apearance on our radar screens and the opening of their bomb-bays over our cities and industrial installations. That fact leaves no time for emptying such garage shelters of their bulky, inflammable contents (as anyone who has tried to get his car out of a public garage knows) in order to make room for human occupancy in any numbers or with any degree of comfort—not to mention safety.

The enemy might conceivably strike at a time when there were a minimum number of automobiles using such storage. Then we must assume that—in a predominately business district — most of the people patronizing and working in that area have left, with their cars for residential and other areas, thus reducing if not eliminating, the need for mass shelter at that particular location.

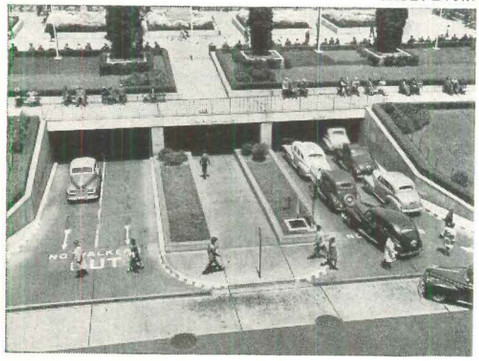
Underground community shelters: funnel to tragedy

Returning to the ideal conditions—a large underground shelter, adequately covered and armored, with most of its floor area freely accessible to the civilians who can reach it in time and protected at its necessarily limited number of entrances against blast and contamination of its occupants—we still must examine what may be expected to happen when it is actually put to shelter use.

Keeping in mind the ever-shortening inte

(Continued on page 80)

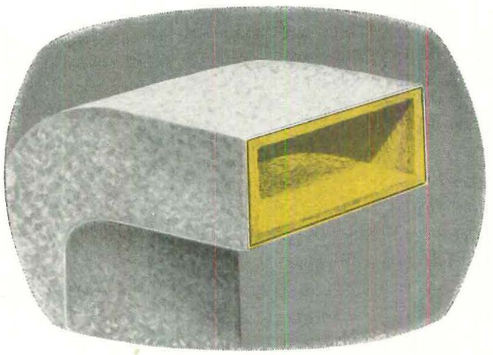
LIFE: *Brem*



Four-level building extending 50' below San Fra cisco's Union Square is a good (1,700 car) soluti to the parking problem but a doubtful answer to t bomb shelter question.

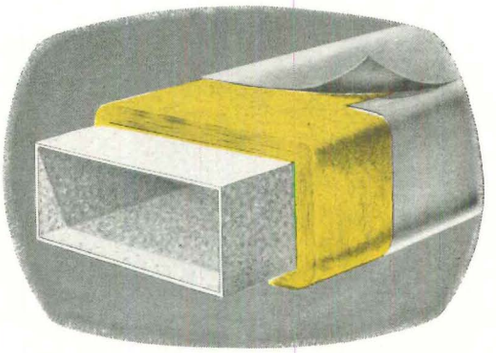
4 popular uses for ULTRALITE

The LONG glass fiber insulation!



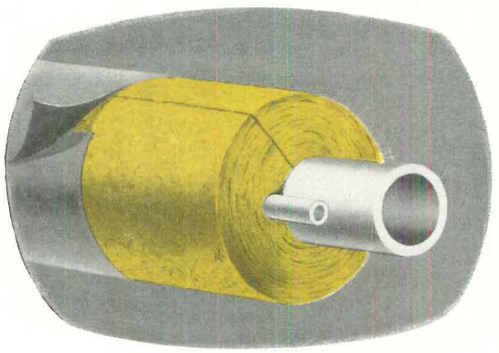
ULTRALITE—the duct liner that won't burn!

Ultralite Duct Liner is a flexible, semi-rigid glass fiber insulation designed specifically as an acoustical duct liner, with excellent sound-absorbing properties. It won't break, chip or delaminate—won't flake off in air stream! You can run it quickly around curves and corners, run it through the brakes and shears with the metal, fasten it in place with screws and washers or adhesives.



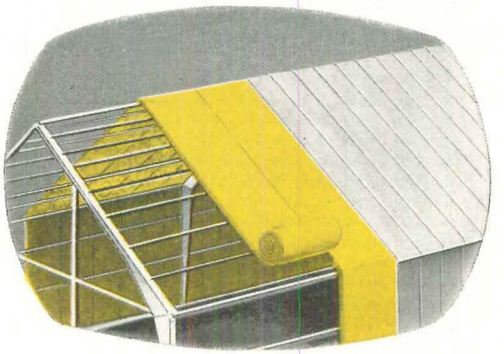
ULTRALITE—the easy-to-install duct insulation!

It's "duct soup" to wrap air ducts with Ultralite Thermal Duct Insulation—it's as easy as wrapping a package! Ultralite Duct Insulation is available plain or with your choice of 4 different vapor barrier facings, already adhered to the insulation. Ultralite is non-irritating, pleasant to handle, fire-resistant and non-corrosive to metals. K-factor is very low—and so are applied costs!



ULTRALITE—for general piping applications!

For a smooth, neat wrapping job on pipe from 1½" up, where surface temperatures do not exceed 425° F., try Ultralite! Goes on quickly, especially around valves and fittings; stands up under bumps and rough usage without breaking or losing thickness. Saves money, too—applied costs are only ⅔ that of hemi-cylinder pipe insulation for weatherproofed outside lines! Available with vapor barrier or weatherproof facings already attached.



ULTRALITE—perfect for metal buildings!

Wherever there's a place for metal buildings that need insulation, there's a place for Ultralite. No need to fasten it in place if you insulate when the building is erected; simply apply Ultralite between metal skin and structurals, and its resilience keeps it in place . . . permanently! Available with 4 attractive vapor barrier facings, already adhered to the insulation.

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- ☐ Ultralite Duct Insulation
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Name_____

Firm_____

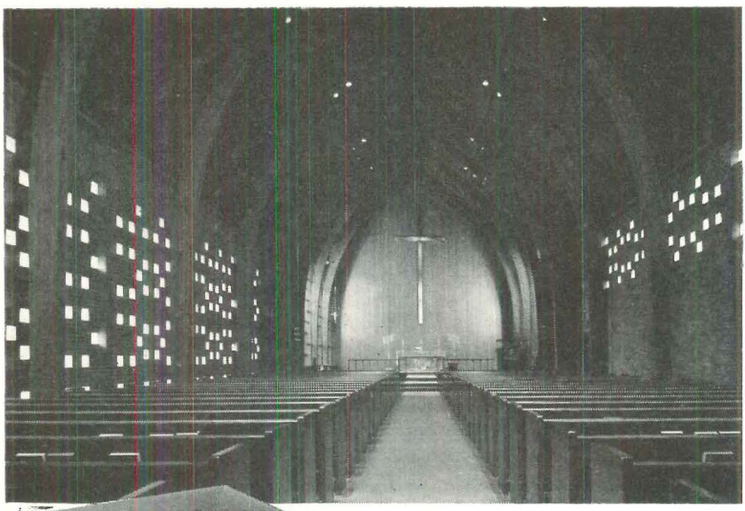
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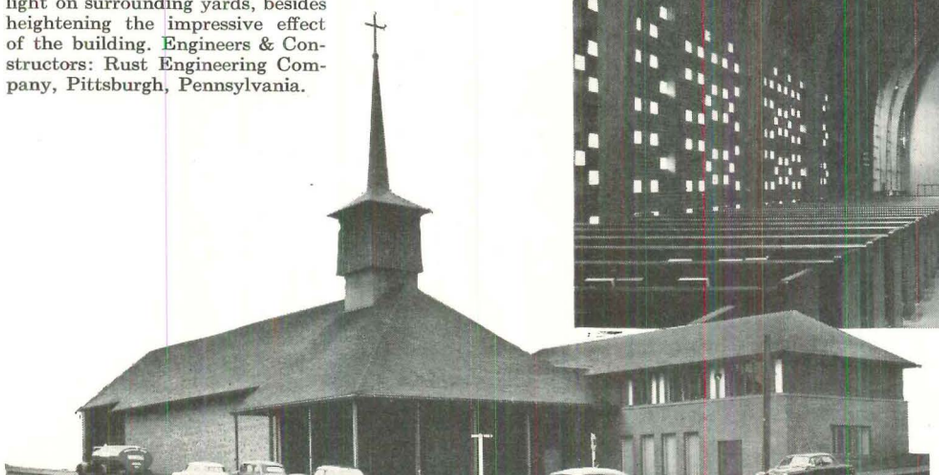
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Architectural adaptability



THIS distinctive, modern structure—a building of United States Sugar Corporation, Clewiston, Florida—utilizes PC *Functional* Glass Blocks as curtain walls, admitting floods of daylight, properly diffused for comfortable vision. At night, the interior illumination casts protective light on surrounding yards, besides heightening the impressive effect of the building. Engineers & Constructors: Rust Engineering Company, Pittsburgh, Pennsylvania.





AT the Zion Lutheran Church, Portland, Oregon, PC Decorative Glass Blocks are used in a very interesting manner. In the interior view, note how ingeniously these glass blocks have been placed. In buildings of all types, PC Glass Blocks add a highlight of beauty, make interiors more cheerful. And they assure privacy, cut off distracting outside views, are easy to clean. Architect: Pietro Belluschi, Portland, Oregon.

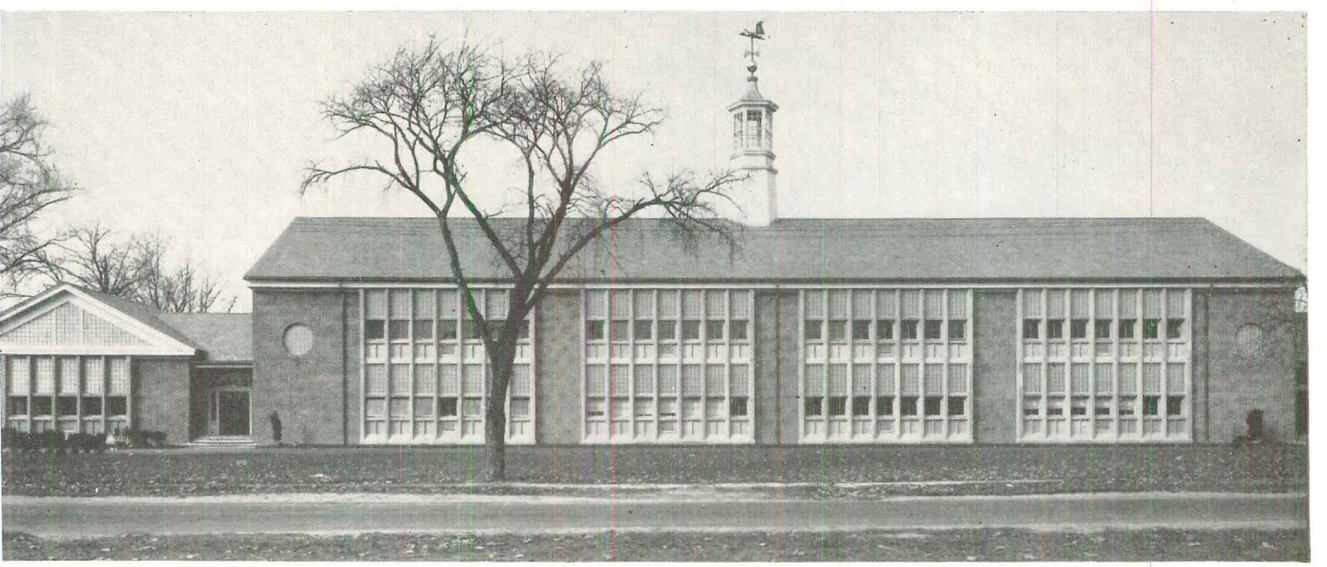
PITTSBURGH PC CORNING ®

GLASS BLOCKS

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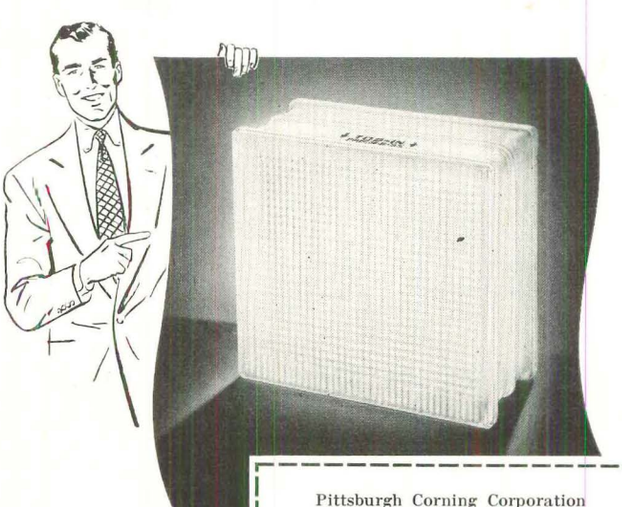
an important feature of

PC GLASS BLOCKS



HOW the †*PC Vision-Lighting Plan* is used in a structure of traditional design is shown above. The new Stone School at Walpole, Mass., utilized modern PC Glass Blocks with telling effect. This is another example of the adaptability of PC Glass Blocks to any architectural style. Besides, the PC *Functional* Glass Blocks installed at this school make the most of daylight. They make sure that adequate daylighting is admitted, diffused and directed for optimum eye comfort. What's more, PC Glass Blocks—*functional* and *decorative*—reduce excessive heat losses, cut fuel expense, lower maintenance costs. For they have more than twice the insulating value of ordinary single-glazed windows; require no periodic painting and puttying; no repairs or replacements. Architects: Perry, Shaw & Hepburn; Kehoe & Dean, Boston, Mass.

† *The PC Vision-Lighting Plan is a construction for daylight openings consisting of orientation-keyed areas of PC Functional Glass Blocks (selected for sun or non-sun exposure) used with vision-ventilation areas as required. Standard sash is available from many sash manufacturers for such combinations with glass blocks.*



Specify the functional glass block especially designed for precision work . . .

New, exclusive features in PC *Functional* Glass Blocks make the *PC Vision-Lighting Plan* even more effective for daylighting areas where critical seeing tasks are performed. These include light-directing prisms on the interior faces of certain patterns, light-spreading corrugations on outside faces, a fibrous glass insert to diffuse still further the light transmitted by the block itself, and the PC Soft-Lite* Edge Treatment, which creates a better, more comfortable "eye-ease" panel appearance.

*T.M. Reg. Applied for

Pittsburgh Corning Corporation
Dept. D-41, 307 Fourth Avenue
Pittsburgh 22, Pa.

Without obligation, please send me your FREE booklet on the use of PC Glass Blocks in industrial, commercial and public structures.

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Y W. P. FULLER & CO. ON THE PACIFIC COAST, AND BY HOBBS GLASS LTD. IN CANADA

THE ANSWER TO
THE NATION'S NEED . . .

for fast industrial expansion!



Expansion Beginning
Spartan Aircraft Co., Tulsa, Okla., begins with 15,200 square feet of floor area. Note completed building below.

Build Quicker with QUONSETS

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For additions to your present plant—or for new plants—Quonsets mean *fast* completion, economy of materials, adaptability to *any* use. Also, when plants need expansion, you can add Quonset to Quonset, according to the need.

Made of N-A-X HIGH-TENSILE steel, Quonsets provide non-combustible construction and permanence far surpassing less modern buildings. They require little upkeep—are easily maintained. Let Quonsets serve you.

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PRODUCER OF NAX HIGH-TENSILE STEEL

Expansion Completed
Additional Quonsets, with extensions and connecting arches, provide Spartan Aircraft Co. with a total of 35,600 sq. ft. of floor area.



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val we can expect between a bombing alert and the strike, we should have no difficulty visualizing vividly the physical conditions and public behaviour that will instantly follow the alarm as people converge—many of them in utter panic—on an underground refuge. Building entrances and stairways would immediately clog and crush with humanity; elevators would be fought over and jammed beyond operation; street traffic would snarl inextricably; pedestrian traffic would become a rout for survival; and shelter entrances, however carefully guarded and controlled, would suddenly turn into choked, trampled funnels of stampeding death, surpassing the past tragedies of our great theater and transportation holocausts.

If we choose still to discount or disregard the foregoing threats to anything approaching safe bomb shelter use, we have yet to consider just how safe human life would be in these isolated caverns, once it were inside. The first and principal need would, of course, be an adequate, uninterrupted supply of oxygen, obtainable in one of two ways: the conditioning and circulation of air drawn from the probably contaminated outside, or intricate, expensive stored-oxygen sources, functioning somewhat on the principle of the "oxygen tent." Either one of these methods would require a constant source of power for its operation and complete shielding against explosion-damage and sabotage—a difficult feat, as any mechanical engineer will agree. Should a sabotage party or paratroop attack accompany the bombing, it would take but little effort to demolish or seal off an underground oxygen supply and exterminate all life within the enclosure—a ghastly parallel to Buchenwald—with its victims self-chosen.

Entrances, too, would have to be constructed with air-locks much like tunnel workers' and divers' "decompression chambers," to prevent contamination of the interior—either by accident or by enemy intention. These entrances would have to be built to permit quick, safe access for medical and defense personnel, for food, bedding, medicines and the removal of refuse, as long as the neighboring atmosphere remained unsafe for human activity.

Dispersed shelters: simplified survival

Fortunately, the civilian shelter problem has a solution. A solution which does not include the costly, concentrated mammoth bomb "shelter." To understand this solution—and it's a simple one—one should read or re-read the official U. S. Government booklet, *Survival Under Atomic Attack*, a vivid, forthright, simplified description of what is likely to happen and

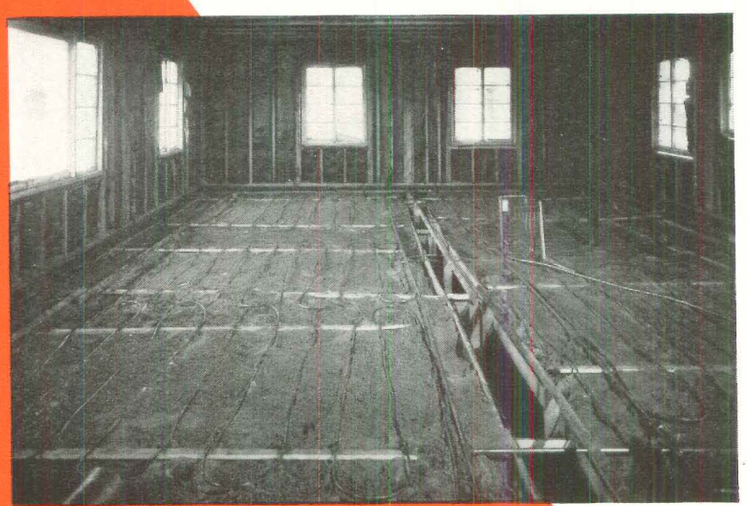
(Continued on page 86)

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Guaranteed by Good Housekeeping
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"MATICO ASSURES TOP EFFICIENCY FROM Modern Radiant Heating"



ONE OF THE FEW LOW COST HOME DEVELOPMENTS FEATURING RADIANT HEATING. Troy W. Maschmeyer homes offer many plus benefits to buyers — such as MATICO floors. Above, in this radiant heat installation, 1100 feet of seamless copper tubing is placed on 9 inch centers, set on 12 to 18 inches of fill sand. 4 inches of concrete is then poured over the installation. A water temperature of 120 to 125° is maintained from boiler.



A MODEL FLOOR FOR "MODEL" HOMES. This striking MATICO Asphalt Tile Floor in the model home still looks like new, although many thousands of people have walked on it. MATICO'S wall-to-wall decor was a definite aid in selling the Maschmeyer homes.

...says Troy W. Maschmeyer, prominent builder of low cost homes in the Detroit area.



Troy W. Maschmeyer, President, Troy W. Maschmeyer Co.

Naturally, the Troy W. Maschmeyer Co. selected asphalt tile for the flooring of the radiant heated homes of its huge housing development in suburban Detroit. Asphalt tile permits the highest BTU output of any floor covering.

Naturally, the asphalt tile specified by this Company is MATICO. MATICO Asphalt Tile is quality-proved in such installations throughout the country. Moreover, colorful, long-lasting MATICO provides the smart wall-to-wall decor desired by today's homeowners.

MATICO's precision cut square corners and straight edges allow easier, faster installation, too — an important time-saving factor. And MATICO keeps costly breakage to a minimum.

Easy-to-clean MATICO is available in 27 rich, clear colors — including exciting, new pastel "Petal Tones" — that harmonize readily with any decorative scheme.

Check all the many advantages of superior MATICO when next you specify asphalt tile flooring. You'll find MATICO ideal for every type of installation.

Get to know MATICO.
See our insert in Sweet's Architectural File, Section 13g/MAS

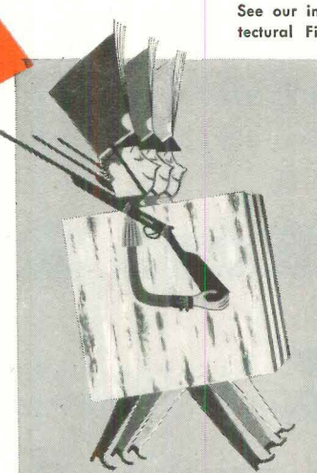
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to conform to Federal specifications for

Flexure
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HOMASOTE presents

the NOVA Roller Door

—the silent, fingertip flush door for passage ways and closets

—developed through two years of constant research and field testing

Highest in quality . . . simple and inexpensive to install . . . silently responding to fingertip control . . . here is the roller door as you knew it would one day be perfected.

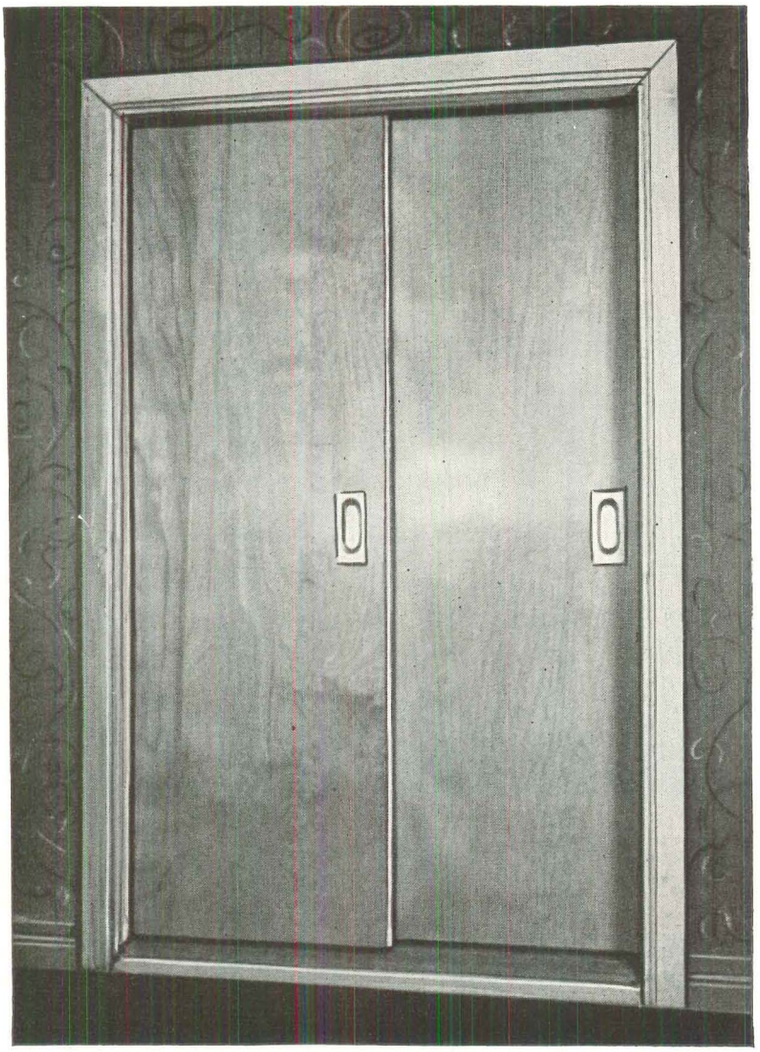
This is a hollow core, flush door—regularly sold in unselected gum, paint grade—which can be painted or stained for many beautiful effects—Black Walnut, African Mahogany, Birch, Red or White Oak.

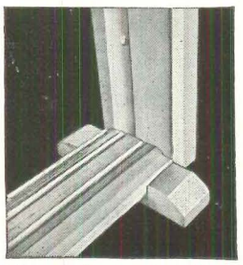
Nova Roller Doors are light, strong and warp-resistant. They are ideal for closets, basement storage, garage storage, storage walls and removable partitions.

The closet may be one of the standard sizes—or extend the width of the room. Two or more doors enclose it entirely. Instead of opening only part of the closet, as with a swinging door, you have full access. And—you don't waste the valuable floor space needed to accommodate a swinging door.

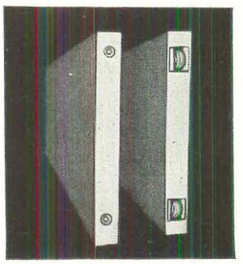
The Nova Roller Door comes cartoned with special side jambs, head and floor tracks and all hardware installed. In less than one hour's time, one man makes the complete installation. *Nine standard opening sizes:* 32″, 36″, 40″, 48″, 56″, 60″, 72″, 84″, and 96″. *Three standard heights:* 6′0″, 6′6″ and 6′8″.

We urge you to write today for the full details.

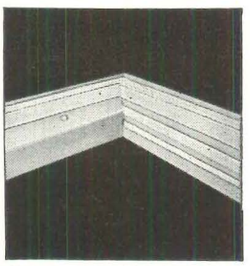




The oak floor track, laid on the finished floor, sets the proper distance between jambs at the bottom. Note rubber bumper on jamb.



Revolving roller guides operate in head track; vulcanized rubber rollers in floor track — assuring silent, fingertip control.



Side jamb (left) is routed to receive the door; head track (right) is accurately machined for perfect operation of revolving roller guides.

NOVA SALES Co. TRENTON 3, N. J.

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Save Men...Money...Material *with* Concrete Joist Construction

In these days of critical shortages—when men and money and material must be used to the very fullest, there is one method of building that truly meets the need on every count—it's Ceco's Meyer steelform construction. For here is a building way that saves as it serves:

Saves men because less time and labor are required in providing open wood centering and form work.

Saves money because less concrete is used . . . the dead load is kept at a minimum . . . less lumber is needed . . . and since removable steelforms can be used over and over again, only a nominal rental fee is charged.

Saves material because only a minimum of critically short steel is needed —and even here less concrete is necessary than required by other concrete floor constructions.

Ceco originated the removable steelform method of concrete joist construction. The company is first in the field—actually providing more services than all competitors combined. So, when concrete joist construction fits the need, call on Ceco . . . the leader over all.



SCHOOLS—Safe, low-cost construction is assured: concrete is kept at the minimum required for the live load. Saving in dead load reduces costs throughout the structure.



CONCRETE JOISTS eliminate much of the concrete below the neutral axis, saving money, saving material. Suited to buildings with long spans: stores, offices, apartments, hotels.

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Westinghouse



PARKAY Haddon Hall Pattern Hardwood Floor Completed in 2½ Hours

The place—Hunt Room at The Cavalier, Virginia Beach, Va. The problem—install a 14′ x 14′ hardwood dance floor without interruption to regular dining room service. The solution—Parkay Haddon Hall Pattern (basketweave) flooring.

Three workmen began operations immediately following the breakfast period. First, the carpet area was removed. Then the 12″ x 12″ units of Parkay Haddon Hall oak flooring were applied with special adhesive over the terrazzo floor. Two and one-half hours later the beautiful patterned hardwood floor was ready for dancing feet—and customers were enjoying luncheon in an immaculate dining room.

Parkay Features That Speed Work — Save You Money

Every feature of Parkay Haddon Hall Pattern (basketweave) flooring makes for fast, clean installation. It comes to the job in easily handled 12″ x 12″ beveled-edged units composed of 2″ x 4″ and 2″ x 2″ solid blocks 1″ thick. The beautiful, lasting factory-finish eliminates messy, time-consuming, on-the-job finishing. No sawing or nailing. Parkay is applied with Special Adhesive over any sound subsurface—wood, cement, terrazzo.

For beautiful, low cost, lifetime hardwood flooring that can be installed in hours instead of days, investigate Parkay Haddon Hall. Light and medium finish Oak, Walnut, Avodire, Mahogany or Teak. Write for descriptive literature. Parkay, Inc., 5001 Crittenden Drive, Louisville 9, Ky.

PARKAY
READY-FINISHED HARDWOOD FOR FLOORS AND WALLS

what the individual can do about it. It will be noted that this official handbook omits conspicuously any dependence on mass "bomb shelters" as such.

For instance, this clear, compact set of instructions emphasizes the fact that, in the immediate area of a direct modern bomb hit, there is little one can do to protect himself and his belongings, whereas, at a reasonably short distance from the bomb burst, the chances for survival are preponderantly in favor of individual survival. And what may be of far greater importance to both the individual and his community is the fact that, individually and unherded, everyone can do more to prevent and reduce bomb damage to himself and his personal property.

Now to the question of "shelters," other than basements, storm-cellars, bank vaults, trenches, building bases and the countless other forms of blast protection. Steel, concrete and other heavily protective shelters are practical and effective. But they must be of the "dispersal" type, located for immediate access by smaller groups of the populace. Their sizes and locations should follow the pattern established during World War II in the revetments, the baffles, the entrenchments and the smaller personnel shelters erected at nominal cost on our air fields, our ammunition depots, our war posts and our war factories. Furthermore, such smaller, widely dispersed shelters would leave our large underground facilities, such as garages, subways and vaults free to maintain the vital utilities and services of the community.

Prefab components: for economy and re-use

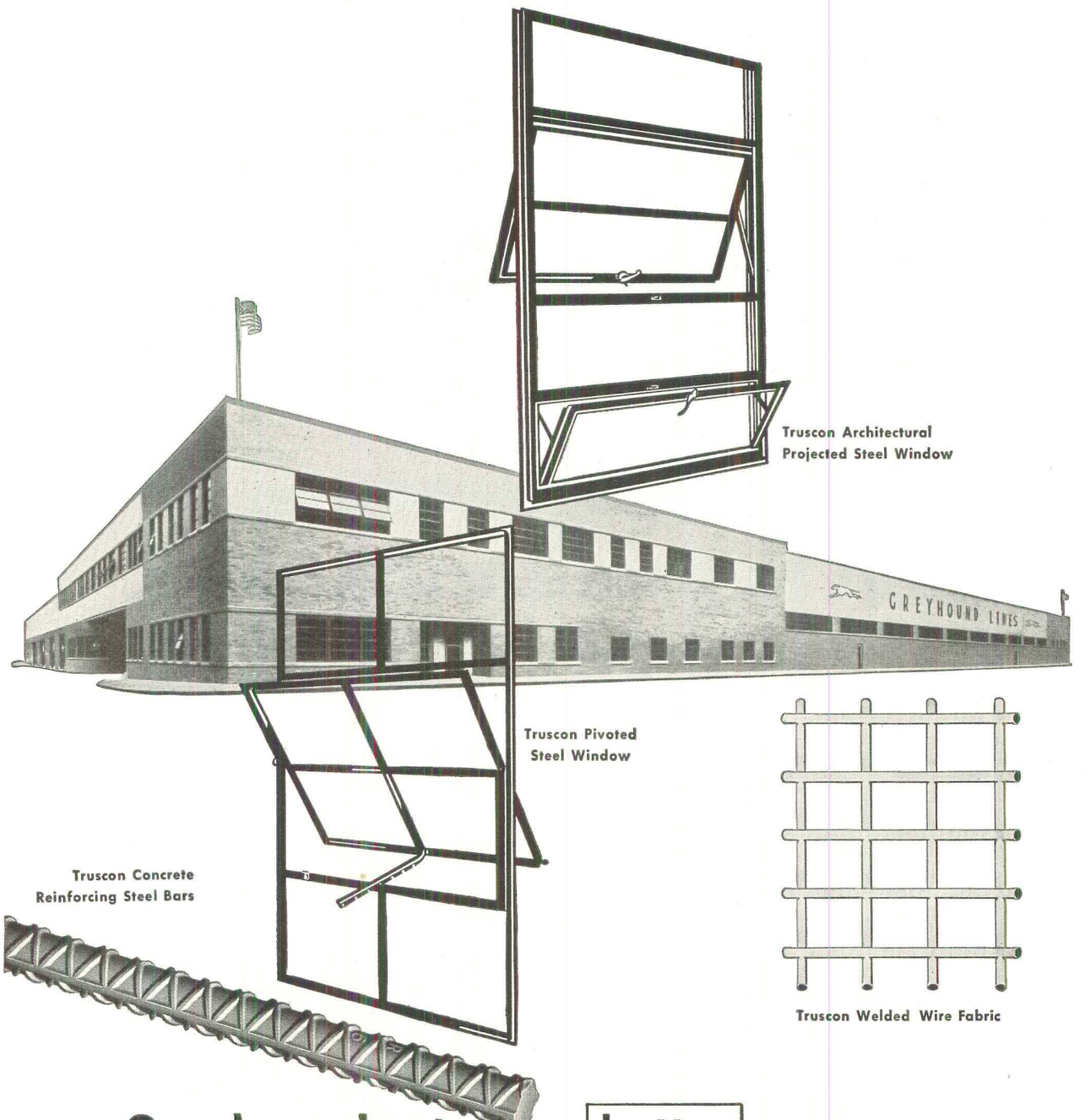
Certainly the structural engineers of the country, the Portland Cement Association, the American Institute of Steel Construction and Government agencies can and should quickly develop small shelter design and standardized or "module" construction, possibly for prefabricated erection on vacant properties, street curb lines, parks and playgrounds. Such standardized structures would present no more obstruction (and only a small fraction of the cost) than do our continuous programs of community street and utilities reconstruction. And, at termination of the emergency, these structures could be cheaply dismantled or demolished.

Such shelters could be provided through the already established construction manufacturing processes used in pipe and culvert installations. Two section-shapes each lend themselves to the problem:

1) A traverse section having the form of a true semi-circle, fabricated or cast in concrete

(Continued on page 92)

TRUSCON... a name you can build on



Truscon Architectural Projected Steel Window

Truscon Pivoted Steel Window

Truscon Concrete Reinforcing Steel Bars

Truscon Welded Wire Fabric

Greyhound sets a better pace...

Smart-looking . . . streamlined and permanent . . . this new Greyhound Repair Shop at Detroit, Michigan, incorporates many Truscon Pivoted Windows, Architectural Projected Windows with Screens, Concrete Reinforcing Bars and Welded Wire Fabric.

Credit: Harley, Ellington & Day, Architects; Arthur O. Misch Co., General Contractor.

See SWEET'S for complete details on the entire line of Truscon Steel Windows for every purpose; and write for detailed literature on all other Truscon Steel Building Products.

TRUSCON MARK OF MERIT PRODUCTS

TRUSCON® STEEL COMPANY • YOUNGSTOWN 1, OHIO

Subsidiary of Republic Steel Corporation

Build Defense Homes NOW!



Switch to prefabrication... profit the P&H way

You can stay in business—even if government loan curbs, rising costs and material shortages have limited your *conventional* market. The nation needs low cost housing, especially in critical industrial areas.

You can fill defense housing needs, immediately, profitably, by building the new 1951 P & H *factory-engineered* homes. Your community gets permanent housing quickly... saves materials, manpower. You enjoy controlled costs, assured profits.

Whether you now build 5 homes or 500, you can get *volume sales, project savings, minimum risk, prompt delivery, financing* by following the P & H *Builder Profit Plan.*

You can sell quality homes priced for every volume market—selected from the complete P & H line—floor areas from 672 to 960 square feet... two bedrooms or three, full basement or utility, left hand plans or right, "end placement" plans for narrow lots.

This advertisement pictures only one of the 60 elevations—all reversible—in the complete P & H line. Your projects gain infinite individuality, avoid "row house monotony," with such P & H special features as gable and hip roofs, gable and hip porches, yard-wide eaves, trellises, jib supports, window boxes, classic panels, shutters and door designs.

Government and financial agencies recognize the enduring quality and lasting value of P & H homes—planned and priced to meet all current housing regulations, national and local. P & H volume sales, easy financing, assure you steady profits in today's uncertain home building market.

FINANCING AVAILABLE—When local financial resources are limited, you can get either construction loans or long term mortgages through facilities of Harnischfeger Corporation's service subsidiary, Builders Acceptance Company.

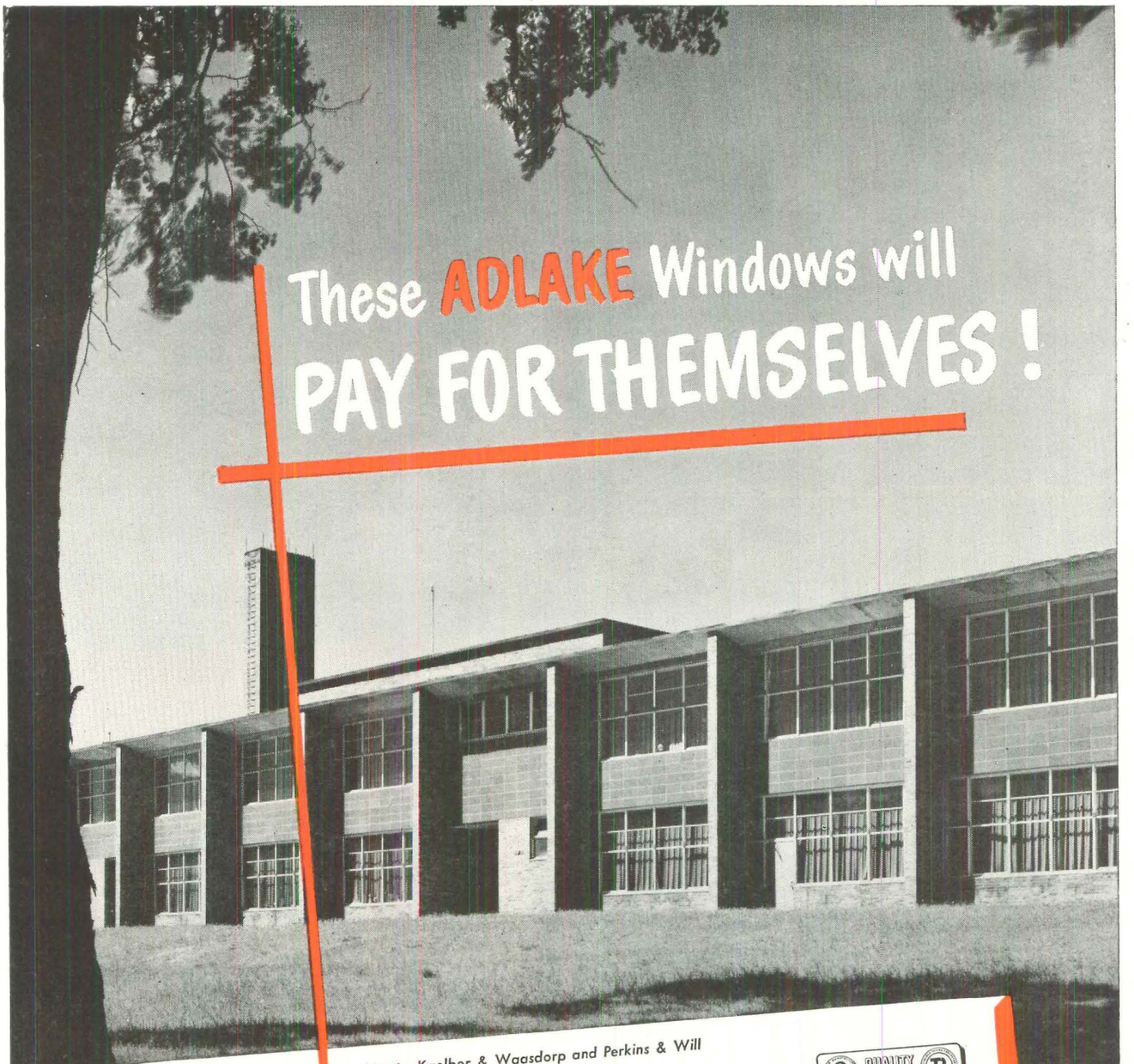
Write today for details of the P & H *Builder Profit Plan.* Ask for free booklet, "How to Win on the 1951 Home Front."

P&H Harnischfeger Corporation

HOUSES DIVISION

14 Spring Street • Port Washington, Wisconsin

Volume Sales • Project Savings • Minimum Risk • Prompt Delivery • Financing



These ADLAKE Windows will PAY FOR THEMSELVES !

Architects: Kaelber & Waasdorp and Perkins & Will
Contractor: Swartout and Rowley

The Adlake Aluminum Windows in the new Indian Landing School at Brighton, N.Y., will ultimately *pay for themselves* by eliminating maintenance costs! They require no painting, no maintenance but routine washing! And their smart, modern good looks and smooth operation *will last as long as the building itself!*

Only Adlake Windows have the combination of woven-pile weather stripping and patented serrated guides that assures minimum air infiltration and absolute finger-tip control. And Adlake Windows never warp, rot, rattle, stick or swell!

QUALITY APPROVED

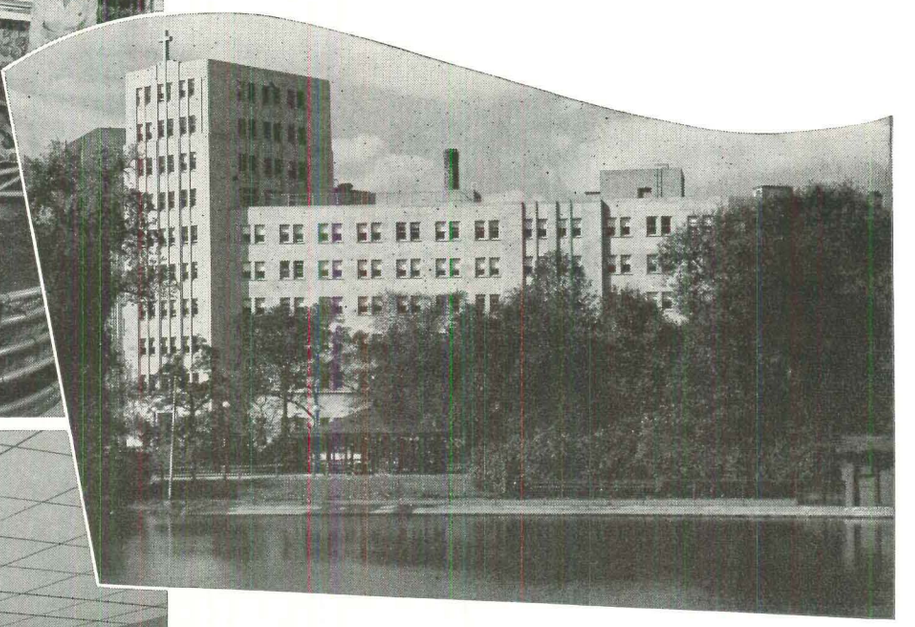
Availability and delivery of Adlake Aluminum Windows will, of course, depend on current government aluminum requirements.

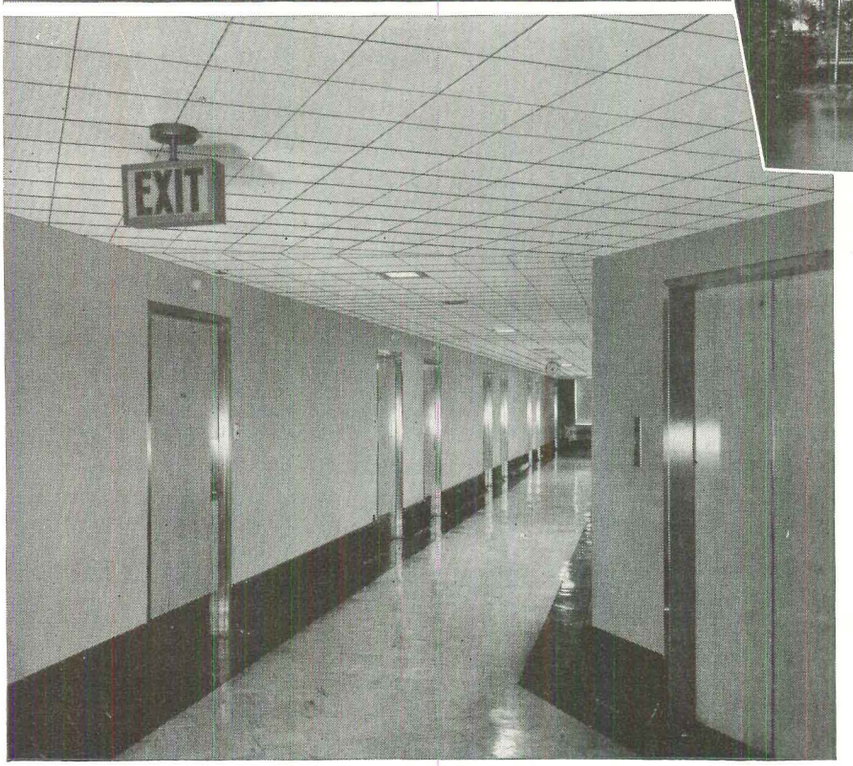
THE Adams & Westlake COMPANY

Established 1857 • ELKHART, INDIANA • New York • Chicago



Building: COLUMBUS HOSPITAL—ADDITION
Architect: Leonard Anthony Gliatto
General Contractor: Warner Construction Co.
Acoustical Contractor: General Acoustics Co.
All of Chicago, Illinois





DESIGN for Clean, Firesafe, Quiet BEAUTY

Fiberglas* Acoustical Tile is specified more and more, especially where fire safety is a must. This incombustible tile offers a unique combination of values:

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- Low Cost

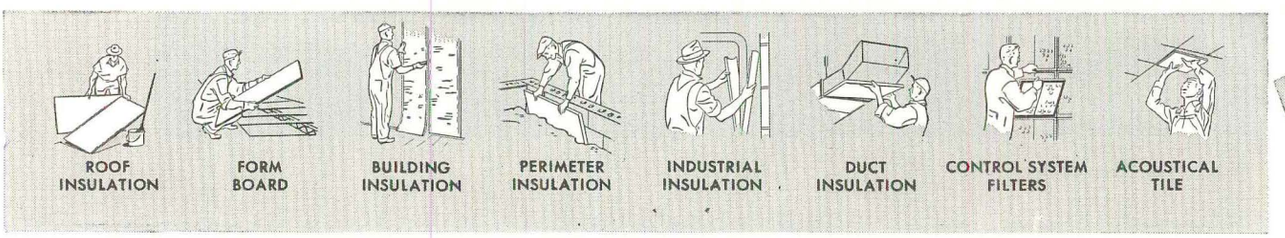
For complete specification information on Fiberglas Acoustical Tile, see Sweet's Files—Architectural, or call your local Fiberglas acoustical contractor, listed in the yellow pages of the phone book.

Owens-Corning Fiberglas Corporation, Dept. 67-D, Toledo 1, Ohio. Branches in principal cities.

OWENS-CORNING FIBERGLAS ACOUSTICAL TILE

*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of the Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

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for **beauty**

and **DURABILITY**



SECURITEE SYSTEMS*, mechanical attachments for erecting acoustical tile, are designed to give strength, beauty and uniformity to any installation in which they are used. By affording the proper full length tee support they allow access to piping or wiring without trouble and without disturbing the appearance of the ceiling.

There are no parts to assemble, making erection costs lower. This, plus adaptability to old or new construction, makes SECURITEE SYSTEMS* outstanding in the building field.

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★ Every application step is visible ★ Individual units may be replaced ★ Adaptable to all acoustical units that can be kerfed and will support their own weight on 12" centers.

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General Contractor: E. H. MARHOFER JR. CO., Chicago Acoustical Contractor: GENERAL ACOUSTICS CO., Chicago

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Marley makes cooling towers for Main Street — for *every* building, large or small; for every air conditioning system, simple or complex. Each Marley tower is built to handle a specific job efficiently, and to be harmonious with the architecture of any building, be it hotel or hot dog stand. Marley offers, of course, large-capacity cooling towers for industries down by the tracks. In every major city, there's a Marley application engineer to consult with architects on water cooling problems. His services and experience are yours for the asking — call your Marley man for the full story of the world's only complete line of cooling towers.

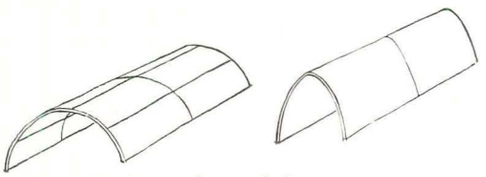
there's a MARLEY man in every large city

The Marley Company, Inc.

KANSAS CITY 15, KANSAS

either entire, from spring-line to spring-line, or in quarter-circle segments, adequately tongue-and-grooved and locked at their top central joint. For transporting and storing, the quarter-segments would "nest" more compactly than the half-circles. Precast in longitudinal lengths or bents of roughly 3 or 4′, with a thickness (wall) adequate to resist the dead load and an arbitrary external force factor and tongued into an adequate base or floor structure, such units or modules could be used to develop any length shelter required. End closures could be standardized in design to provide either cast-in-place baffled entrances or interlocking masonry-unit seals.

2) The parabolic section (as used in most of our military ammunition depots) while requiring greater stress-resistance in the lower



Semi-circular and parabolic concrete sections, such as Author DeHuff suggests for bomb protection, are easily fabricated and suitable for re-use

wall sections (and thus greater cost and weight) has the advantage of "nesting" almost without space loss in storage or transport. Keyed into its base, this type would require no "hinged" or tongue and groove top joint. Its end closures could follow the same design factors as those suggested above, and in standardized longitudinal segments would permit modular design in length.

Shelters comparable to our military ammunition "igloos" could easily and inexpensively be partly submerged in shallow excavations with the displaced earth sloped against the sides to provide additional blast protection and the opportunity to plant out unsightliness.

Unlike the "flat-tops" of the proposed large community bomb shelters, these circular or parabolic sections would afford, in their rounded, sloping faces, a far greater resistance to blast-force and flying debris.

Another great economic advantage inherent in the semi-circular or parabolic section shelter construction is the fact that, dismantled after use, they could readily be utilized, inverted, as drainage canal linings, water-diversion structures, or crown-up, as right-of-way culverts.

Just as it is a universally recognized fact that dispersal—not concentration—is the modern preventive against loss of life and property, either on the battle field or the home front, it should be promptly and finally recognized that shelter against bombing attacks is no exception to this fateful rule.

A. I. A. File #23D

Kentile can be installed over any smooth, firm interior surface

Wood—Boards for rough flooring should be nominal 1 x 4's or 1 x 6's that are square edged and nailed twice at each bearing, preferably running diagonally. T & G top flooring should not be over 3" wide. ¼" waterproof plywood laid over the rough flooring makes a suitable surface to receive Kentile.

Metal—Kentile can be installed over metal if the surface to be covered is firm, smooth, clean, free of scale, dust, oil, grease and other foreign matter.

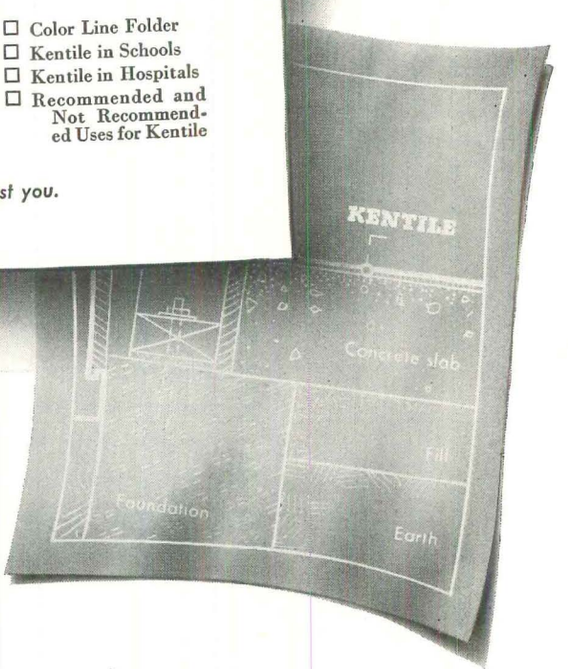
Concrete—Kentile can be installed over concrete that is smooth and free of foreign matter...even concrete on fill in direct contact with the earth...walls and floors above or below finish grade.

Kentile should not be installed out-of-doors or over wood in contact with the earth. Kentile should not be installed in commercial areas where it is exposed to petroleum or cooking greases and oils, alcohols and most acid solutions. In cases such as these, SPECIAL KENTILE is recommended. It can be installed wherever standard Kentile can be used.

The following literature is available on request and is designed to aid in the specifying of floors and walls for residential, commercial or industrial building or remodeling.

- ☐ Architects Specifications
- ☐ 16 Page Catalog—includes 4-color photos of Kentile installations
- ☐ Color Line Folder
- ☐ Kentile in Schools
- ☐ Kentile in Hospitals
- ☐ Recommended and Not Recommended Uses for Kentile

Please write the Kentile, Inc. office nearest you.



✓SPECIFY KENTILE BY NAME...because of its

...**appearance**—a complete range of marbleized colors in Kentile and SPECIAL Kentile. Also, feature strips, decorative inserts, edging and cove base.

...**installability**—Kentile can be applied over any smooth wood, metal or concrete surface...even below finish grade over concrete on fill in direct contact with the earth.

...**availability**—Over 3,000 Kentile dealers throughout the country assure prompt attention to your needs.

...**service**—Nine conveniently located Kentile, Inc. offices and a nation-wide system of trained representatives plus a comprehensive selection of technical literature, are available to help solve any flooring problem.

...**low cost**—Installed prices are lower than those of practically any flooring material; varying with size and condition of floor; colors and thicknesses chosen and freight rates. Accurate estimates are available from any Kentile dealer—listed under FLOORING in your classified phone directory.

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The Asphalt Tile of Enduring Beauty

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This Sunshine Wall Makes Students Brighter (*Literally*)

Almost gone is the grey, grim, penned-up classroom. In its dreary place is the warm cheerful softness of sunlight and an atmosphere of freedom. An atmosphere built by a room-length, ceiling-high wall of graceful Fenestra* Windows.

And the most remarkable thing about this beautiful wall of Fenestra Intermediate Steel Windows is not the great areas of light-inviting glass, not the controlled ventilation you get with smooth-swinging vents —it's the fact that it's not expensive.

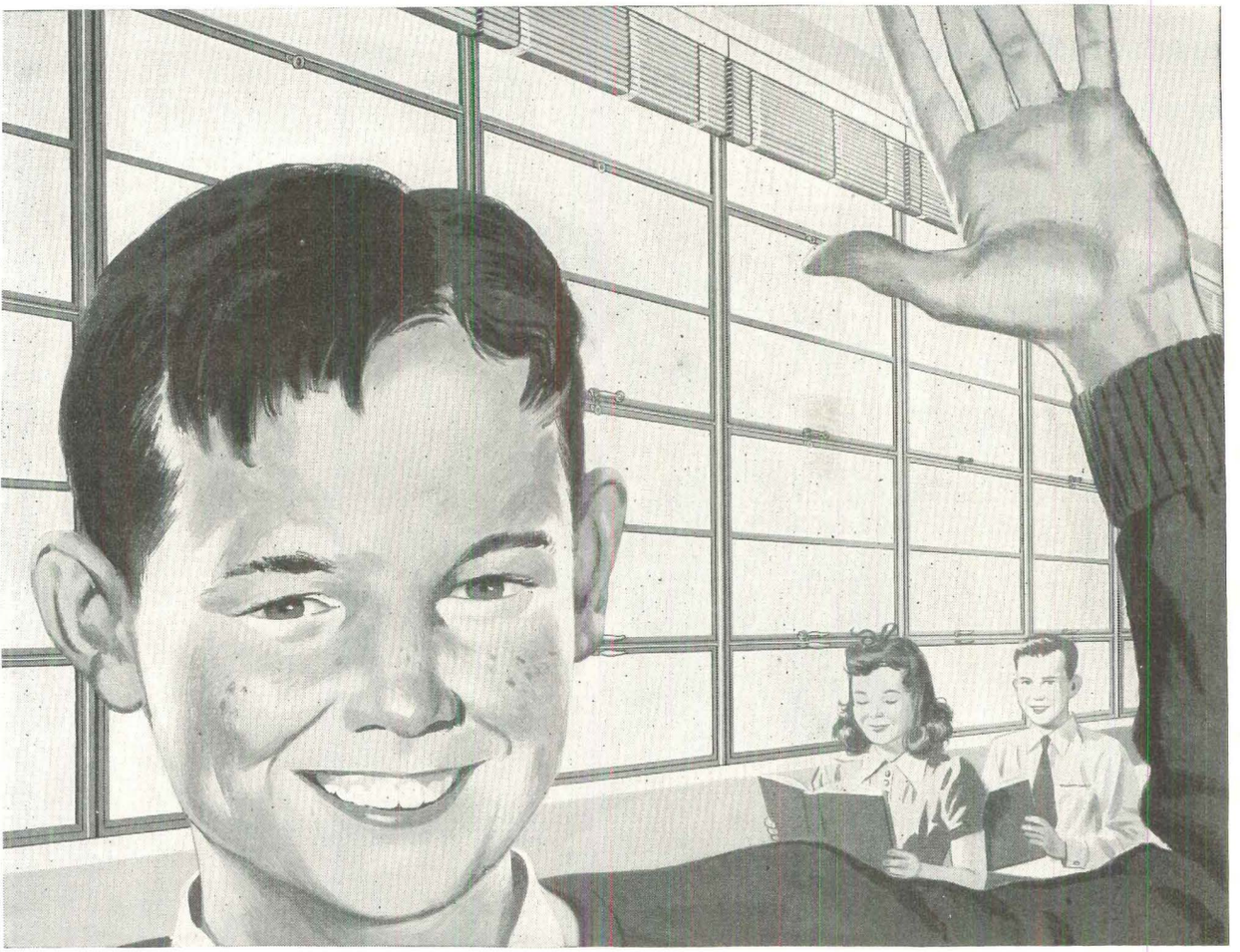
Compare the *performance,* the *quality,* the *installed cost,* the *maintenance cost,* of *standardized* Fenestra Windows with any window on the market.

Get *standardized* Fenestra Intermediate Steel Windows—engineered to cut the cost of building.

For further information, call your Fenestra Representative (listed in the yellow pages of your phone book), or write to us.

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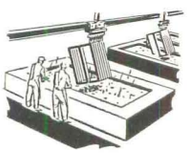
Fenestra **WINDOWS • PANELS • DOORS**



Fenestra Hot-Dip Galvanized Windows
No Maintenance Problems! No More Painting!



ENGINEERING—Window fabrication is specially engineered.



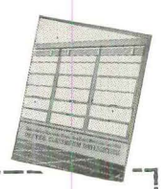
GALVANIZING AND BONDERIZING—Hot-Dip galvanizing is done in Fenestra's own special new plant (the only one of its kind in the country) *after* assembly of frames and assembly of ventilators, so the *whole* surface gets a uniform, protective coat of zinc. Bonderizing gives the galvanized surface a beautiful appearance and prepares it to hold decorative paint if desired.



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engineered to cut the cost of building

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Please send immediately your free new booklet on Better Classroom Daylighting.

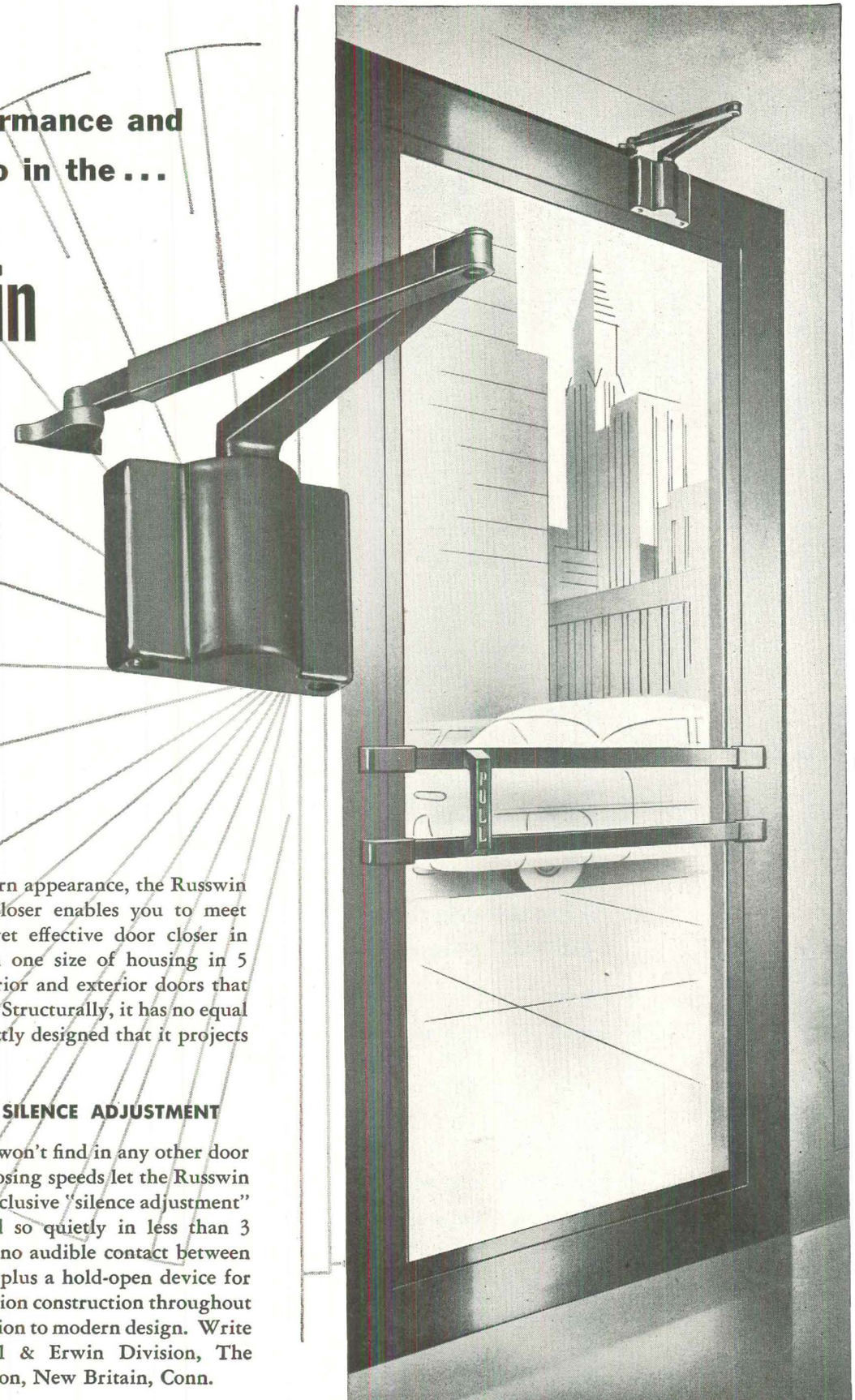
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By combining power and modern appearance, the Russwin "400" Semi-Concealed Door Closer enables you to meet demands for an unobtrusive yet effective door closer in modern buildings. Made with one size of housing in 5 spring sizes, it handles all interior and exterior doors that can be handled by a door closer. Structurally, it has no equal for strength. Yet it's so compactly designed that it projects only 1¾" from door face.

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Here are two "extras" that you won't find in any other door closer. Four combinations of closing speeds let the Russwin "400" work at top efficiency. Exclusive "silence adjustment" permits the door to be closed so quietly in less than 3 seconds from 90° that there is no audible contact between door and stop. These features plus a hold-open device for 18 different positions and precision construction throughout assure top performance in addition to modern design. Write for full information. Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

NO OTHER DOOR CLOSER GIVES YOU THIS 4-SPEED CONTROL

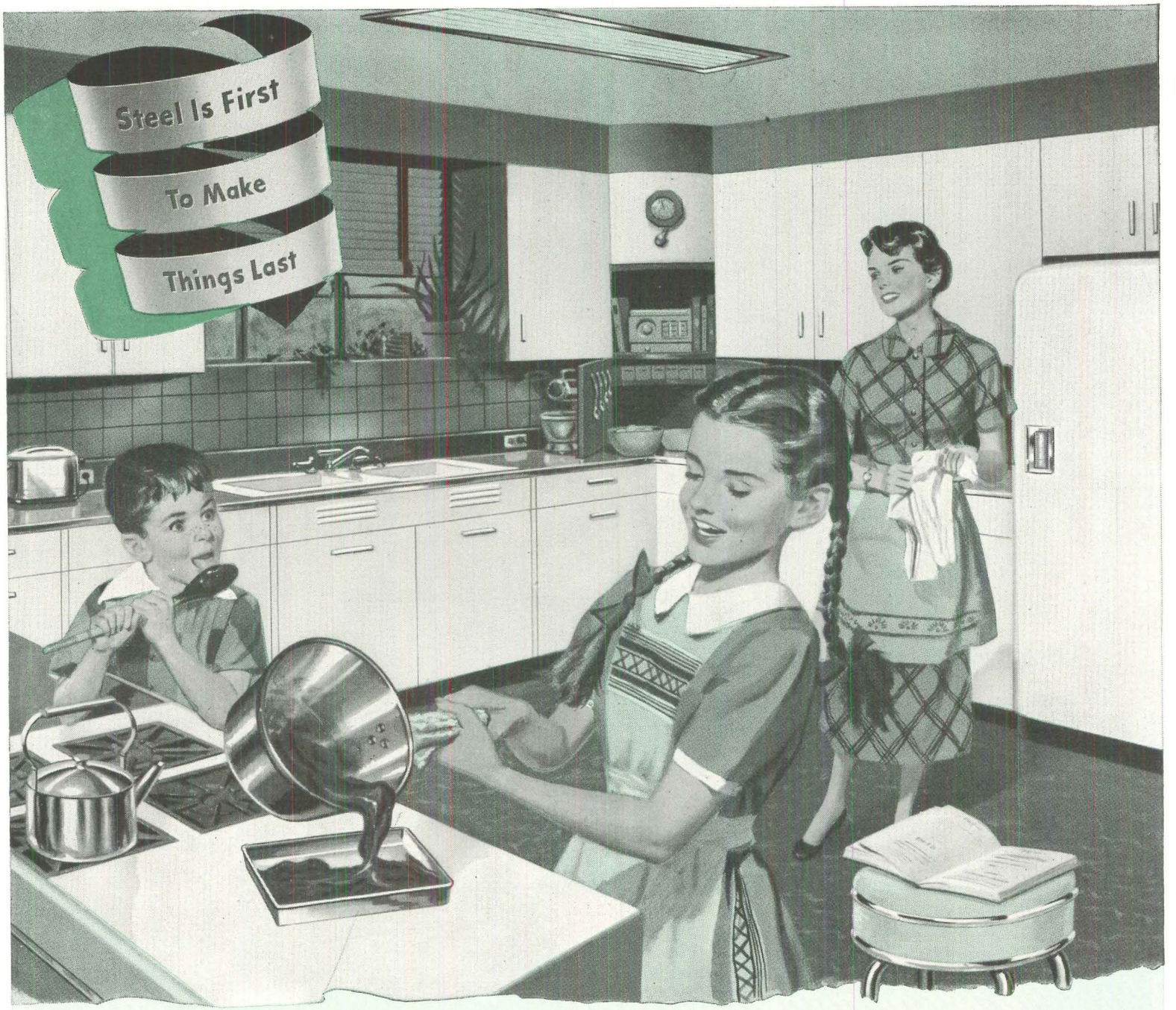
- **Uniform Speed** Select Closing
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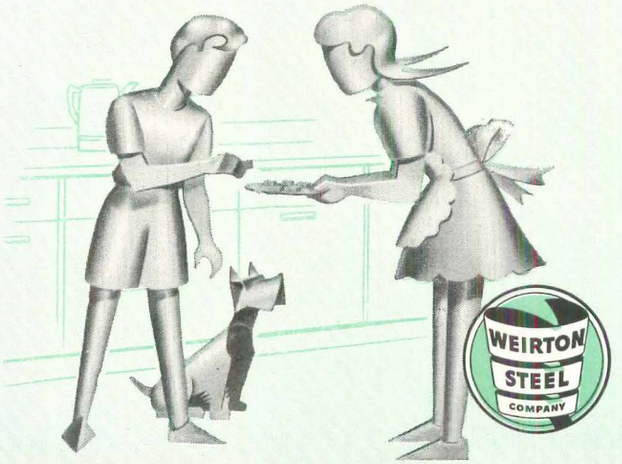
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Room with a view to the future



Metal sculpture, executed in Weirzin—electrolytic zinc-coated steel that resists heat, moisture and rust—demonstrates the exceptional workability of this easily fabricated metal.

Mighty attractive kitchen all the way around. Looks like a pleasant place to work. Looks like an easy place to work.

What's more, it will be a pleasant and easy place to work for years to come. Because practically everything you see is made of steel—America's great bargain metal.

Steel appliances and furnishings are favored because they are functional—efficient, fire-proof, strong, durable.

Because they are fashionable—with good looks that last through years of use. *Because they are steel*—the metal that does so many things, so much better, for so much less.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

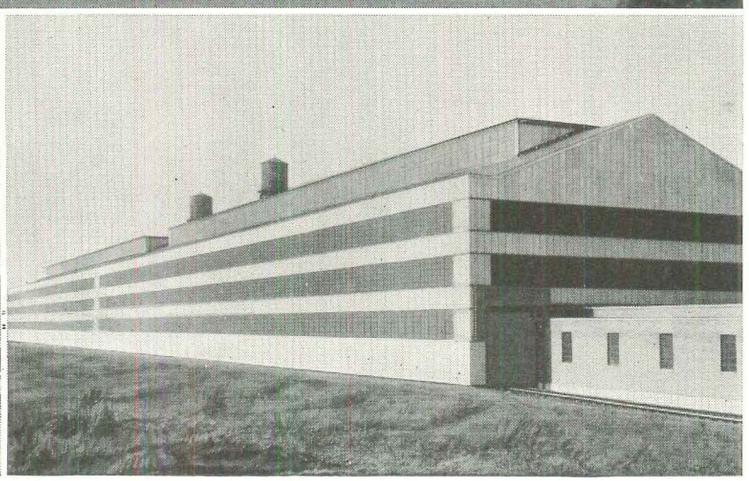
NATIONAL STEEL CORPORATION

IS YOUR BUILDING

Workers and the community are proud of this Glen Rock, N. J. weaving plant of F. Ducharne Silk Co. A "Controlled Conditions" plant; designed and erected by The Austin Co. Office area faced with Alcoa Aluminum.



Administration Building, Aluminum Company of America, Davenport, Iowa, Rolling Mill. Wall facing of Alcoa Aluminum Cast Panels. Harrison & Abramovitz, Architects. Geo. A. Fuller Co., General Contractors.



Cleveland Chamber of Commerce awarded this Perfection Stove Co. plan medal for "Meritorious work of designers and builders." George S. Rider Architects. G. A. Rutherford Co., General Contractors. 885 feet of plant faced with Alcoa Aluminum panels, fabricated and erected by H. H. Robertson



A GOOD NEIGHBOR?

Public Relations is a building function, too!

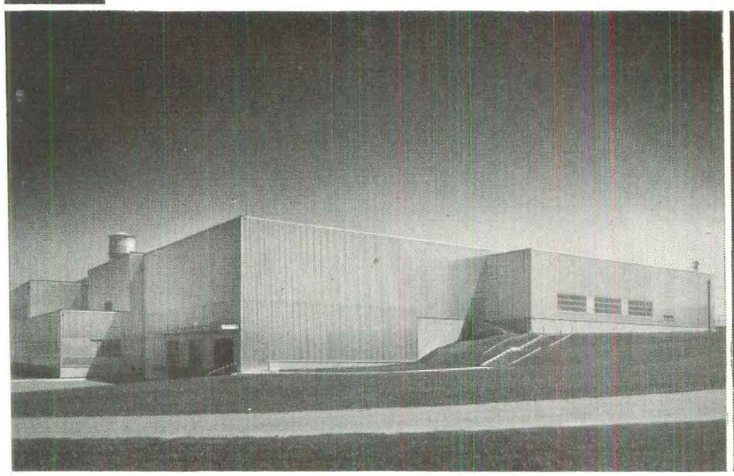
Attractive buildings help to build good public relations. They attract more and better workers; increase both the employees' and the communities' pride in the company.

In each of the buildings shown here, aluminum wall facing has been used to improve both the building's appearance and efficiency. Aluminum does both jobs well because no other building material so well combines economy, workability, long life, freedom from upkeep and lasting good looks.

Because rearmament needs come first, the supply of aluminum building products is limited. If you need new buildings for defense production, consider aluminum for fast construction, economy and lasting good appearance. For information on availabilities call your nearby Alcoa Sales Office or write ALUMINUM COMPANY OF AMERICA, 1887D Gulf Building, Pittsburgh 19, Pa.

ALCOA

FIRST IN ALUMINUM



ylon Throwing Mill, Duplan Corp., Winston-Salem, N. C. Lacy, therton & Davis, Architects and Engineers. Alcoa Aluminum used for xterior walls, window sash, doors, copings and ventilation louvres.



"The aluminum siding has given excellent service and we receive many compliments on its appearance," says the Fuelane Corp. of their two aluminum-clad plants at Windsor, Vt. and New Lebanon, N. Y.

Brand-new Dealer Sells 38 National Homes in First Open House

BANKS & LEE, INC.
Contractors and Builders
824 TOWER BUILDING
Washington, 5, D. C.
REPUBLIC 1506

L. P. RICHARDS, SEC'Y-TREAS.

W. S. BANKS, PRES.

Mr. James R. Price
National Homes Corporation
Lafayette, Indiana

February 23, 1951

Dear Mr. Price:

We are so pleased with the results of our first National "Thrift Home" open house at Glen Burnie, Maryland, that we want to give you the details.

Our three-bedroom "Thrift House" was open for inspection from 1:00 to 8:00 P.M. Saturday and Sunday, February 3rd and 4th. During these hours, more than 3,800 persons visited the house and thirty-eight firm sales were made, representing total business of over $320,000.

We have been in the building and development field for many years and are accustomed to crowds and sales, but we were genuinely astounded by the interest shown in National Homes. Prior to the showing, we thought that if 1,200 people visited the house and nine or ten sales were made, our venture would be a success.

Naturally, we are extremely gratified with the results. So much so, in fact, that we are going ahead immediately with plans to develop this entire tract. This year we hope to erect more than 450 National Homes.



Yours very truly,
BANKS & LEE, INC.
W. S. Banks
President

a Typical Experience of NATIONAL Homes Dealer-Builders Everywhere. Investigate!

National Homes not only helps dealers attract huge crowds to local "open house" showings by the biggest ad campaign in the field . . . we also offer a *steady supply* of houses to erect. And every National Home is tops in quality, beauty, comfort, value. Write or phone!

National HOMES
CORP., Lafayette, Indiana
Eastern Plant: Horseheads, N. Y.

NATION'S LARGEST PRODUCERS OF PREFABRICATED HOMES

ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING

Waste and FHA

Everybody knows that FHA is the best thing that ever happened to the home building industry and the home buying public.

FHA financing made volume building possible, transformed home building almost overnight from a trade to an industry, made possible the savings of quantity production and assembly line erection.

FHA standards did much to raise quality minima and gave the home buying public an assurance never before given.

FHA low down payments opened up a tremendous new market, supported year after year the greatest boom the industry has ever known, let millions of families buy homes under a "new type of tenancy."

But everybody also knows that in recent years FHA has hardly kept pace with progress in the industry it created.

Fifteen years ago the new standards set by FHA marked a long advance. Today, FHA standards are too often anchored in the past and holding back the progress of better housing. (FHA finances without question many an architectless, get-rich-quick, eyesore of which public spirited home builders are ashamed and in which civic leaders see the slums of tomorrow—but FHA refused to finance the outstanding advance in small house design offered by Bill Levitt's new Landia House.)

Rightly or wrongly, most home builders feel FHA appraisals are so tightly bound to the minima that they leave no incentive at all to exceed those lowest standards. Certainly the niggardly FHA appraisal allowances for better design have done much to discourage home builders from employing architects and have thus deprived the public of better planned homes. And most FHA offices have lagged far behind the public in accepting contemporary architecture, have kept the public from sharing in either the economies or the better living it makes possible.

Now the Round Table on Waste in Home Building (THE MAGAZINE OF BUILDING, *Feb. '51, p. 115*) ***has reported unanimously that FHA requirements often force more waste on home building than even the notorious local code situation.***

In other cases wasteful FHA standards parallel wasteful codes, thereby frustrating all attempts to get the local codes put on a less wasteful basis (***instead of setting an example for better, less wasteful local standards***).

This is one situation where it should be easy to attack entrenched waste quickly and effectively. FHA has too great a responsibility and too fine a tradition of leadership to let stagnation set in so early in its life. Within a few months, FHA could bring its national standards and the standards of all its 72 local offices up abreast of the times, thereby encourage code reform in every backward community instead of giving comfort to code obstructionism.

Some of this modernization of FHA standards must come at the national level. Mr. Foley and Mr. Richards will find the national leaders of both AIA and NAHB more than ready to work with them in setting new national patterns which will at once raise the quality and lower the cost of housing. Some of the modernization will

have to come at the local level in each of the FHA's 72 offices. There too FHA will find the local AIA and NAHB leaders eager to cooperate on new, better and less wasteful standards.

Most houses must be built to sell for $10,000 or less. Every penny wasted in their construction means less quality, less livability or less house for the money, or else makes it harder for the home builder to reach down to tap a new market among those who cannot afford homes at today's costs.

The sooner FHA resumes its rightful and honored leadership in the movement to raise the standards and reduce the wastes in home building, the better it will be for the industry and for every American home.

Waste vs. Quality

"The more waste we can take out of a house, the more quality and livability we can afford to build into it." To the home buyer this is one of the most important points spelled out by the Round Table on Waste in Home Building.

Reducing waste does not mean lowering standards. On the contrary, during this emergency, reducing waste offers the only alternative to reducing the American standard of living—and housing. And now and always, waste is the great enemy of quality.

The Round Table attack on waste in building aimed at higher standards through less waste, and only on that basis was it sponsored by this magazine and enthusiastically endorsed by the American Institute of Architects, the National Association of Home Builders, the Producers Council, the Mortgage Bankers Association and the United States Savings & Loan League.

A few Round Table proposals were obviously emergency recommendations, covering such problems as what to do if the metals shortage forces a choice between building far less homes or building homes with far less copper—or a choice between far less homes or homes with simpler heating systems. But most of the recommendation were designed to give the house buyer a better and more livable home, both during and after the emergency.

When a house must be planned and built to sell for a price (and most houses must be built to sell for $10,000 or less) every penny of cost added here means something must be taken out there. If the site improvement requirements are excessive (as they so often are), the price may be paid in too narrow lots (which are, in fact, just about the worst feature of most developments). If the framing requirements are excessive, the price may be paid in smaller rooms. If the plumbing requirements are excessive, the price may be paid in poorer fixtures or less equipment. If excessive lights are required in the ceiling, the price may be paid in less base plugs. If foundation requirements are excessive, the price must be paid somewhere else.

The Round Table's conclusion was that from 20% to 40% of all the labor and material that now goes into a small house is just plain wasted. When that waste is stopped, it will be possible to build much better homes to sell to a bigger public at a price it can afford.

NOTE: Reprints of the two Round Table reports on Waste in Building published in the February and March issues are available. While the supply lasts, single copy requests will be filled without charge; the cost of quantity purchases is 5 cents per copy postpaid.—ED.

Standards for eliminating waste AIA-NAHB resolutions,

patterned on Round Table recommendations, detail how to save housebuilding materials and dollars

Acting promptly on the recommendations of the housebuilding Round Table sponsored by THE MAGAZINE OF BUILDING, *a joint committee of the AIA and NAHB last month refined the recommendations, documented them with specific statistics and framed them as resolutions which were adopted by AIA's and NAHB's executive committee. These resolutions (presented in full below) were sent to the National Production Authority as suggested requirements for defense housing construction and to the research bureaus of HHFA, FHA, PHA and BRAB so that the suggested work might start.*

WHEREAS, America's tremendous, absolute and overriding need for arms demands not only increased production but an all-out attack on waste—"The only alternative to a drastic reduction in the American Standard of Living is a still more drastic reduction in the American Standard of Waste"—THEREFORE, BE IT RESOLVED, that, in view of this tremendous immediate need, The American Institute of Architects and the National Association of Home Builders respectfully submit to the National Production Authority the recommendations which follow. The recommendations seek to set up standards enabling architects and builders to apply principles of conservation already known to building technology and frequently prohibited by codes, regulations, or restrictive practices, or prevented by the absence of materials standardized to such principles.

[Identical in all other respects, the AIA resolutions added this strong recommendation "that the NPA move to make these standards mandatory for defense housing construction, either civilian or military, under government sponsorship, control, or financing, and that these standards be made minimal requirements for privately-financed residential construction."—ED.]

SITE PLANNING

In relation to site planning, we recommend adoption of the standards jointly proposed by the Urban Land Institute and the NAHB which, as stated in the Round Table report, could save "millions of pounds of copper wiring, millions of pounds of steel pipe, and millions of hours of labor."

Beyond that we shall urge upon architects, builders and site planners that they pay special attention to sensible land development practice, noting, for example, that a quick and efficient-looking bulldozing operation may sometimes destroy ground cover which costs a great deal more and demands use of conservable time, fuel and machinery when it has to be replaced later on; that it is absurd to blast solid rock to obtain a basement, or bring in tons of fill for the "economy of slab foundations," or to pursue many similarly unthinking habits hitherto condoned.

FOUNDATIONS

We recommend, in accordance with the findings of the Round Table, that HHFA and BRAB correlate existing research which looks to very substantial savings. In view of prevalent code requirements demanding vastly excessive quantities of material, we recommend that defense standards be set up by these agencies in which footings are allowed no larger than the bearing capacity of the soil requires (instead of being set at 16″ or some other arbitrary figure) and in which the thickness of foundation walls be held down to what is actually required by the weight of the building. We recommend that mesh reinforcement of slabs be required only where engineering formulations, applied to the particular site, dictate it, and that the same procedure apply to reinforcement in roofs and walls.

WOOD FRAMING

"Practically every house in the U. S. is structurally overdesigned." Our recommendations with respect to framing fall into two parts: standards of performance and standardization of production.

Standards of performance

Studs. The virtually universal use of the 2 x 4″ stud in U. S. house construction is a case of overdesign. We propose that studs of nominal 2 x 3″ dimensions, placed 16″ on centers, be permitted in all bearing walls and bearing partitions, as well as interior partitions of single-story houses. The material consumption of the 2 x 3 is 75% of that of the 2 x 4.

Live loads. Several hundred cities now allow floor framing calculations based on a live load of 30 lbs. per sq. ft. instead of code requirements all the way up to 60 lbs. per sq. ft. We believe that all government-sponsored or financed construction should be based on the 30 lb. figure and that pressure should be brought for downward code revisions in our remaining cities which now place the figure higher.

Snow and wind load requirements should similarly be re-examined to conform to specific experience in varying localities. The present habit of copying code regulations from some other city or district, where conditions are totally different, is a main cause of wasteful structural overdesign.

Sheathing. Elimination of sheathing should be permitted where infiltration and wind-bracing are otherwise taken care of, as for example, by vapor barriers and diagonal corner bracing. The possible saving of 1,000 bd. ft. of sheathing material in the average small house is a substantial material saving.

Interior surfacing. Where plaster is used no more than two coats should be required, and a particular point should be made, with building officials and FHA district offices of holding the depth of grounds, where used, down to the actual thickness of the plaster. (The ⅞″ ground and ⅞″ plaster now required by FHA is entirely out of keeping with present practice.) A single plaster coat, steel troweled, has been found entirely satisfactory over gypsum lath.

We strongly recommend the elimination of present plaster and lath requirements for the interior of attached garages in the interest of saving time, labor, and material. It is absurd that a car may be parked within 6″ of the house wall without any extra fire protection being required, but the minute a roof is put over this car, the extra materials and labor of fire protection must be added.

We recommend the elimination of the requirement of ceiling plaster over heaters in basements. Even where this plaster is applied to a 10 ft. sq. area, in practice it is punctured by so many openings for ducts, etc., as to be virtually valueless.

Door and window dimensions. Windows should be dimensioned to work with single or multiple stud spacing so as to eliminate cutting and piecing of framing wall materials with consequent waste. Upon further discussion of the Round Table findings, it has been decided to make no specific recommendations as to height of windows or sills. The loss in design freedom would not be compensated by sufficient fabrication advantages.

We recommend that the industry concentrate on producing two interior doors widths: 2′ and 2′-6″ and two exterior doors widths: 3′ (front) and 2′-8″ (rear), all doors to be of a uniform 6′-8″ height.

The door industry should be encouraged to standardize its method of measuring width, relative to clearance and nominal width.

Standardized production

Precut framing members. In the realm of standardized production, we believe that another step is now possible within that progression which has made the American wood-stud house so outstanding an example of quantity production universally available and universally under-

(Continued on page 176)


of Tulsa

SKYSCRAPER BANK

blends good design and good economics in a wide-open ground floor, a tier of garden terraces, a shining tower of prime office space

LOCATION: Tulsa, Okla.
ROBERT CARSON & EARL H. LUNDIN, Architects
EDWARDS & HJORTH, Structural Engineers
GAYNOR & ALBRIGHT, Mechanical Engineers
MANHATTAN CONSTRUCTION CO., General Contractors
JOHN W. HARRIS ASSOCIATES, Consulting Contractors

Tulsa is bursting with pride over the year's best commercial office building — functional, dramatic, visually coherent.

When this 20-story structure opened the city turned out for an all day jamboree which involved every leading Tulsan, 2,000 out-of-town VIP's, a galaxy of screen stars, two big-name dance bands, a full symphony orchestra and the Governor of Oklahoma. The city's busiest corner was closed to traffic for 24-hours. Crowds jammed the streets, and by midnight 52,000 people had inspected the handsome quarters of the principal owner and tenant—Tulsa's First National Bank & Trust Co.

Good architecture paid off not only in public acclaim but at the cash register, too. Within a few months First National shot into first place among Tulsa's banks. Business zoomed way beyond expectations for all the percentage rent retail tenants on the open ground floor. All office floors were snapped up at an average of $5 a sq. ft. —double the rent for the best offices anywhere else in town. Features of the building include:

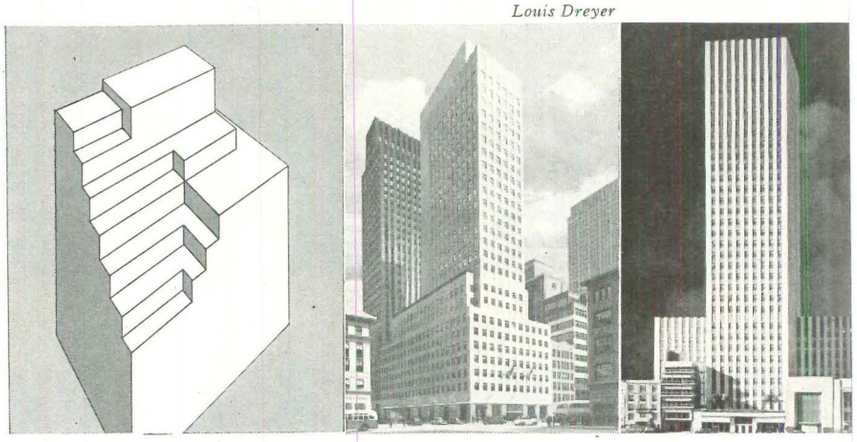
1. A ground floor arcade that is as profitable as it is pleasant;
2. A spacious, serenely lighted main banking room on the second floor;
3. A tier of refreshing garden terraces which enhance the rental value of their floors.
4. A handsome marble frame which exorcises the curse of candy stripe horizontality and binds together such diverse elements as the strip windows and the louvered penthouse.

Cost, including complete air conditioning and the bank's sumptuous interiors, was about $6,000,000 or $1.45 a cu. ft.

One reason why New York architects Carson & Lundin were able to create such a successful building in Tulsa is that they were not prisoned inside New York's antiquated zoning envelope. To get the same cubage on a comparable New York lot, they would have to either 1) mold the same number of floors into a ziggurat of rigidly prescribed setbacks with extremes of overly shallow and overly deep space 2) eliminate some of the setbacks and make up the cubage with a tall tower limited in area to only 25% of the lot size or 3) persuade the owners to buy the tower rights of adjoining properties so that they could build a tower of more practical size and assure it enough light and air (examples, right).

In Tulsa, however, Carson & Lundin could satisfy the bank's requirements for deep space on the first five floors and then step back to a clean, L-shaped tower which provides 13 floors of prime office space, all within 28′ of continuous windows. Each tower floor has a net rental area of 7,500 sq. ft. (exclusive of corridors)— three times the permissible area of a New York tower on the same size plot. Though small for big New York corporations, these tenant floors are well suited to Tulsa's needs.

Louis Dreyer



Under New York zoning, a building of the same height and cubage as Tulsa's would have to be wrinkled with setbacks (left). Carson and Lundin's Rockefeller Center buildings show only other New York alternatives: 1) bulk floors topped with tall 25% tower (center); 2) larger tower made possible by purchase of adjacent tower rights (right).

Although the building provides much better office space than most of New York's cakemold structures, the owners missed an opportunity to create still more ideal conditions. Mainly because the 140 x 100′ corner lot cost a whopping $850,000, they did not buy adjoining property to protect the north side of the tower from the encroachment of possible future building. (Purchase of tower rights alone is not possible in Tulsa). As a result, the architects left the north wall almost blank, placed the service core against it and limited the tower floors to an area that could be well lighted from windows on the remaining three sides.

Height of the building was limited by the site's sandy soil. More stories would have required costly caisson foundations instead of the present spread footings. Even the present height was made possible only by using weight-saving cellular steel floor decks and lightweight aggregates.

◀ *Ezra Stoller—Pictor*

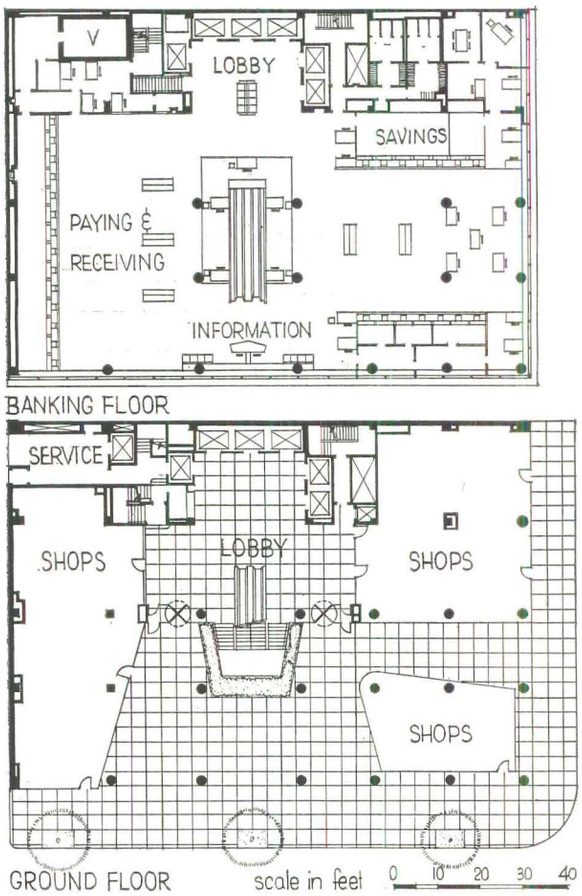


Photos: Ezra Stoller—Pictor



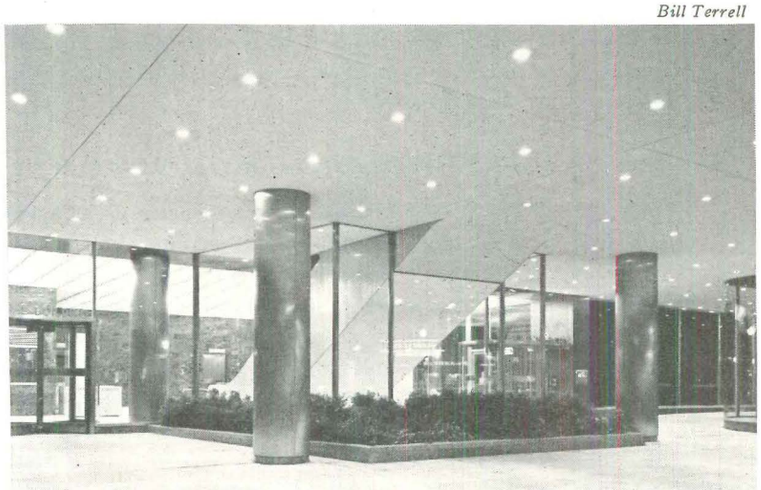


Columns in main banking room (above, left) are sheathed in stainless steel. Floor and counters are of sea-green terrazzo; north wall and lighting trough are greyed oak. Mural will replace flags on west wall.



Pattern of columns seen through glass-walled shops and lobby creates illusion of a completely open ground floor. Dramatic projection of lobby into arcade (below) houses stairs leading up to bank, down to vaults.

Bill Terrell



A 20th Century open-air bazaar

In designing this building Carson & Lundin have come through with one of the first really practical applications of Le Corbusier's 30-year-old idea for an office building perched above a hospitable open ground floor. Whereas New York's Lever House (THE MAGAZINE OF BUILDING, June '50) will sacrifice some $200,000 a year in potential store rentals to gain the amenities of a wide-open ground floor, this building combines open space with stores to collect more rent than the solidly-filled first floors of its neighbors. (They get $2.75 per sq. ft. for stores occupying 75% of their ground floor space; the bank's shops take up only 45% of the plot, but rent for an average of $7.50 per sq. ft.).

The building's breeze-catching promenade flows around two sides of a glass-walled corner shop and into the main elevator lobby (photo, below). Particularly inviting during Tulsa's scorching summer, this sheltered arcade makes shops deep within the building almost as valuable as the street frontage—a big brokerage house which moved from larger quarters to the inner-most arcade space had a 60% jump in business within a month.

Despite its spacious effect, there is little waste space in the promenade: nearly every square foot of open area is needed to handle the heavy traffic drawn into the building by both the bank and the offices above.

A bank that sings with space and light

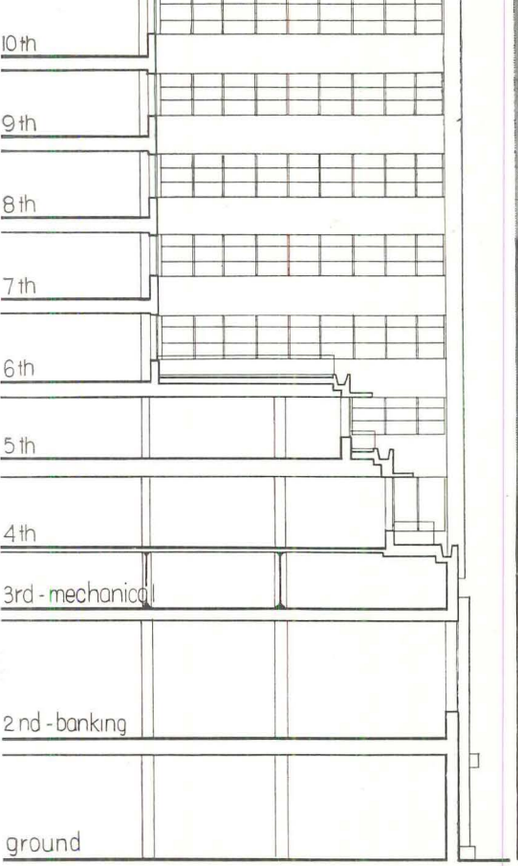
Street floors of too many office buildings are choked by attempts to squeeze into them both adequate traffic space and adequate space for the principal ground floor tenant. The fine open ground floor of this building was made possible only by the bank's willingness to move upstairs and put its main banking room on the second floor.

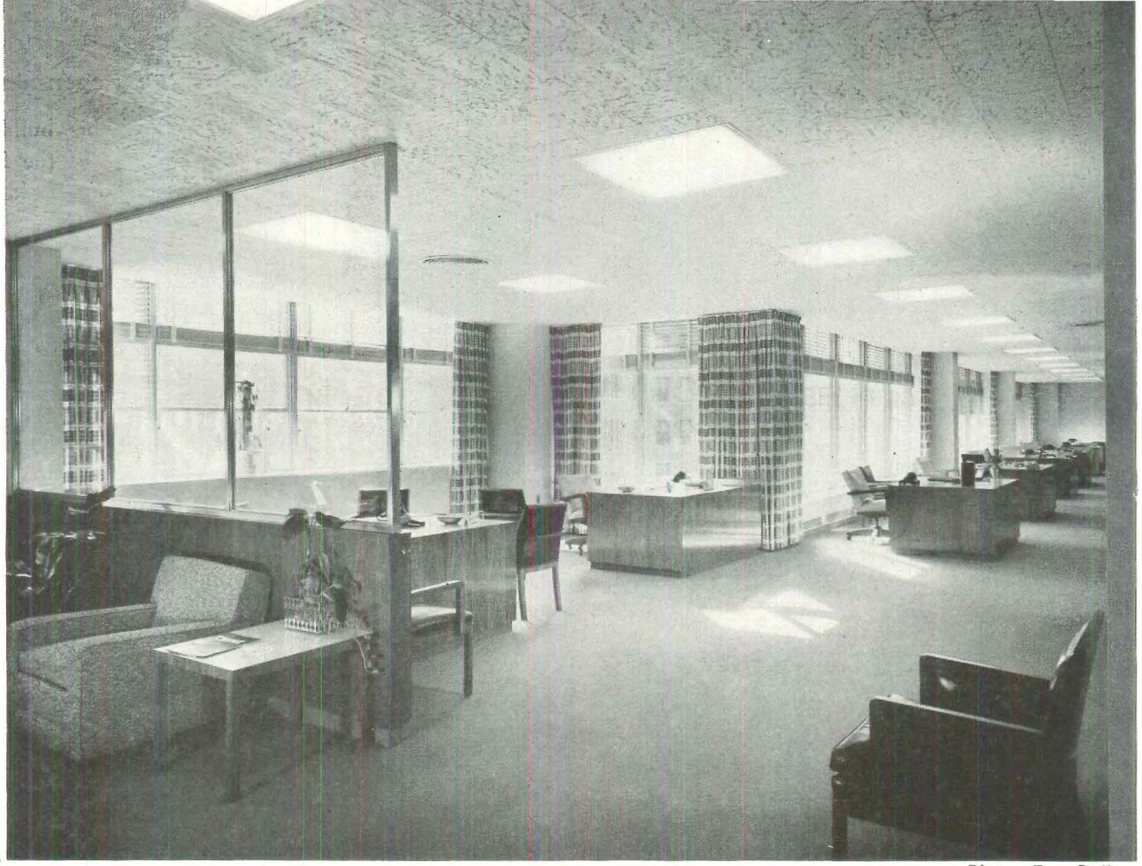
This not only opened the ground floor for circulation and shops; it also gave the bank far better quarters than the street level would have provided. On the second floor the architects were able to create a banking room 70′ x 140′ with floor-to-ceiling windows overlooking the streets on two sides. Boldly framed on the exterior in glistening white marble, these big windows advertise the bank's unconventional location to the passerby. The room is effectively separated from the bustle of the main lobby below, yet easily accessible by moving stairs and elevators.

The lighting of this spacious room is particularly successful. The high windows bring daylight deep into the room, but create no glare problem because of the tall buildings across the street. To supplement and balance this flood of natural light, there is a deep lighting trough all along the windowless rear wall 6′ below the 17½′ ceiling. Packed with seven rows of cold cathode fluorescent tubes, this king-sized trough produces softly diffused reflected light whose intensity can be controlled by dimmers to compensate for changes in the daylight.

High intensity lighting for the working surfaces throughout the room is furnished by clusters of three downlights, each with its separate aperture in a circular metal plate mounted flush with the ceiling. Says Architect Carson, "The aim in grouping the downlights is to prevent the scattered effect produced by numerous units mounted all over the ceiling and to give the lighting a large scale in keeping with the size of the room."

The spaciousness of the room is enhanced not only by good lighting, but by eliminating all but six interior structural columns from the area. This was achieved by transferring upper-floor column loads through deep girders above the banking





Photos: Ezra Stoller

Space for deep girders above banking room was converted to windowless third floor for mechanical equipment and storage (above). Variation of setbacks produces visual interest, gives the rent-producing sixth floor the largest, most elaborately landscaped garden terrace (below).

Officers' section (above) is lighted by terrace windows and 3' square flush fluorescent ceiling units. In tenant space (opposite page) fluorescent tubes enclosed in plastic diffuse some light on the ceiling, avoid the brightness contrast of completely recessed fixtures.



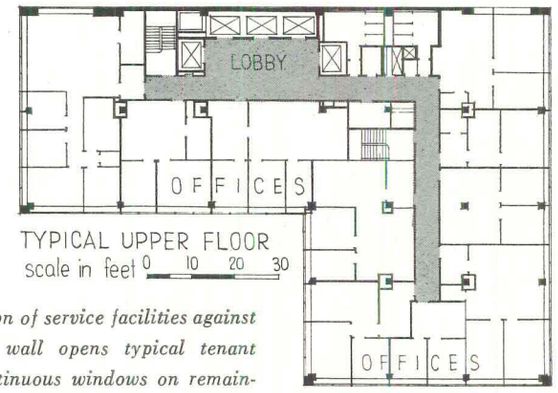
room ceiling. (By adding a few inches to the height of the girder space, the architects squeezed in a highly useful windowless third floor which accommodates a large part of the building's mechanical equipment and houses storage, supply and printing rooms for the bank.)

A tier of garden terraces for pleasure and profit

In the angle at the base of the First National's L-shaped tower the architects have made happy use of garden-roofed setbacks. Disciples of LeCorbusier may not approve making the transition from the deep main banking space to the tower in three easy stages instead of one but the result is pleasanter office space and better rents. The garden-terraced 6th floor—the lowest tenant floor in the building—produces as much income as the top floor—about $1 per sq. ft. more than other tower space. The 4th floor garden provides an attractive backdrop for the senior officers' area, while the terrace above brightens the bank's largest employee floor. Floor-to-ceiling windows overlooking both these spots of greenery are shielded from sun and rain by steel-faced overhangs which effectively lighten the set back facades.

Construction-wise, five features are of special interest:

Roof-top boilers. Because sub-basement space was valuable to the bank for vaults and storage, the two gas-fired boilers are located on the 19th floor along with elevator equipment, fan rooms, air intakes and cooling tower for the air conditioning system. (This mass of mechanical equipment is housed in a marbled-edged, aluminum-louvered enclosure which rises two stories above the rest of the tower, providing an arresting com-



Concentration of service facilities against blank rear wall opens typical tenant floor to continuous windows on remaining sides. Mullions on 5′ module permit flexible interior partitioning.



position of varying heights and masses where the building meets the sky.)

Besides freeing below-grade space for bank vaults, the roof-top location of boilers 1) eliminated the need for a costly space-consuming stack running the entire height of the building 2) lightened the air-conditioning load—boilers in the sub-basement would have created a serious problem in air conditioning the bank's important basement floor above 3) made an extensive boiler room ventilating system unnecessary.

Heating and air conditioning systems cost only $611,000, or about $3.70 per sq. ft. of net rental area. One factor in this low cost was Tulsa's dry climate, which required only two 300-ton compressors for summer cooling, despite high outside temperatures. Located in the sub-basement, the compressors supply chilled water to main fan rooms on the roof and the third floor. These shoot cooled air at high velocity through a vertical shaft to intermediate floors where small booster fan rooms relay it at lower speeds to conventional overhead ducts. The system adjusts itself to the movement of the sun around the building through automatically controlled temperature zones.

Heating costs were held down by using hot-water convectors instead of expensive, individual air-conditioning units under the strip windows. Located in continuous enclosures below the windows, the convectors take 40% of the winter heating load while the air conditioning system assumes the balance. To reduce sound transmission between offices, the enclosures are partitioned with light steel panels beneath each window muntin. Thanks to a monoflow piping arrangement, the convectors do not require valves, but have dampers to control the flow of air across them.

Cellular steel floor decking topped with pumicite concrete fill saved 3,600 tons dead load and about 160 tons of structural steel that would have been added by conventional slab construction. Used throughout the office areas, but not in the service core, the cellular steel also cut construction time and provided complete flexibility of under-floor wiring. Since pipe chases are combined with exterior columns, the flooring was carried beyond the columns, clear out to the spandrels; pipe space between columns is supplied by the continuous radiator enclosure under the windows. Decking cost, exclusive of plastering and fireproofing, was $168,000.

Continuous windows provide even the smallest exterior office with good light, permit flexibility of interior partitioning and make the building virtually air-tight. Their specially designed steel sash consists of two fixed panels and an architecturally-projected center panel which is just large enough to permit the entire window to be washed from the inside. The center pane is locked by key to prevent tenants from opening it and thereby disrupting the automatic heating and cooling system.

All tower windows are 6′-5″ high and either 4′-10″ or 5′ wide. Window heads are flush with the 9′-5″ ceilings both to obtain maximum light and simplify spandrel construction. (A deeper spandrel and lower window head would have lightened the air-conditioning load.) To create a clean line above the usual desk-top clutter, the architects hoisted the sill height to 38″, about 5″ more than is usual. Mullions are 4½″ wide to accommodate either conventional lath and plaster partitions or the movable steel partitions which are used on most of the office floors.

To counteract Tulsa's blazing afternoon sun, windows on the two western exposures have glare-resistant glass which cost $25,000, or some $18,000 more than plate. The combination of this glass plus Venetian blinds and air conditioning has made tenants perfectly happy in space which would otherwise have been considered undesirable in Tulsa.

Exterior facings were selected to express the combination of lightness and strength which is the hallmark of good modern office buildings. Carson & Lundin took full advantage of Tulsa's sootless gas-heating, used light, platinum-gray brick in the spandrels and framed the main masses of the building and the bank's big windows with sparkling white Georgia marble trim. Cost of exterior marble was $68,000.

Costs

Structural steel	$642,000
Excavation	123,000
Foundations incl. reinforcing steel	114,000
Cellular steel floor decking	168,000
Lathe & plaster, incl. fireproof ceilings	440,000
Masonry, concrete arches & bank vault	448,000
Exterior marble	68,000
Interior marble & tile	82,000
Steel sash	76,000
Millwork and carpentry	142,000
Acoustic ceilings	16,000
Steel partitions	156,000
Hollow metal doors	67,000
Finish hardware	28,000
Elevators, moving stairs & dumbwaiters	450,000
Miscellaneous iron & stairs	73,000
Architectural metals	263,000
Painting	58,000
Plumbing	198,000
Electrical, incl. lighting fixtures	575,000
Heating, ventilating & air-conditioning	611,000



EBONY, GRANITE, STEEL and SKILL

Fine materials, industrial techniques and bold imagination knit a house firmly in Nature

LOCATION: Marin County, Calif.
JACK HILLMER, Designer

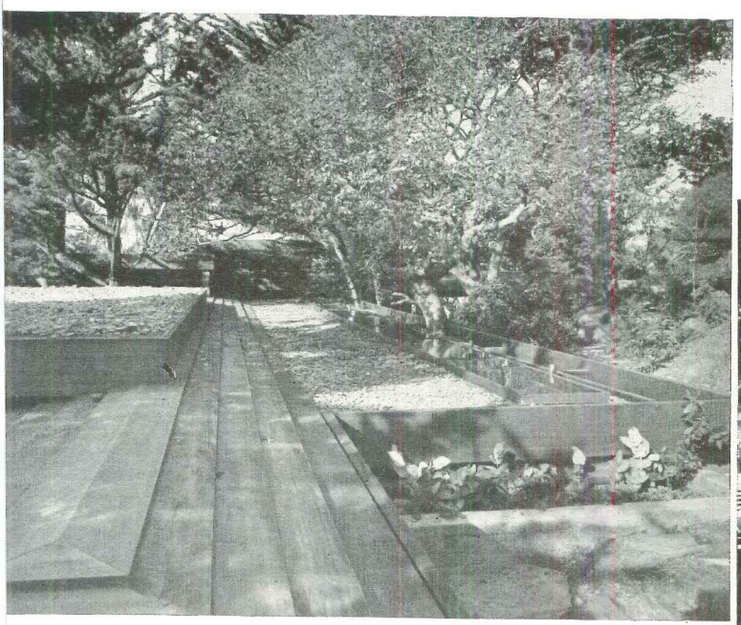
Last year there flashed into the awareness of art-loving San Francisco two bright new talents—"the boys who threw away the T-square." (THE MAGAZINE OF BUILDING, Sept. '49.) Now Jack Hillmer, one of them, has completed a second house which proves that these new gifts were no flash in the pan, that Hillmer is an important designer of fresh sensitive power.

It stands on the beachhead of hilly wooded Belvedere Island in the Upper Bay, facing one of those Golden Gate views that make San Francisco the envy of Paradise.

The roadway comes down from above; where it ends, the path, the planting, and the trees continue steeply down to the shore. Designer Hillmer noted that in so steep a view the roof would be the house; and a stroke of genius told him to make it look also like a part of the garden. In place of the usual gravel he spread the flat surface with pebbles brought up from the beach; the bones of the roof showed through like garden planking; the kitchen skylights began to appear like the glass tops of forcing boxes. In the earlier Haines Hall house the roof was given a decorative pattern of holes to let through the trees; here, far more subtly, there were no holes: the sprawl of live oak and eucalyptus, and the geometry of reaching roof trusses, became an inextricable interweave (photos below).

Again, as seen from below, the house itself seems to grow like a tree straight out of the rocky hillside—an "impossible site." Hillmer's idea was to break ground only for a rear retaining wall and widely spaced concrete piers. (The expensive custom of knocking down trees and gouging out a hillside for an earthen "house platform" had brought Nature's revenge, so he had observed, in many a nasty erosion.) But he had to keep a sheriff's eye on the itching axe-fingers of workmen.

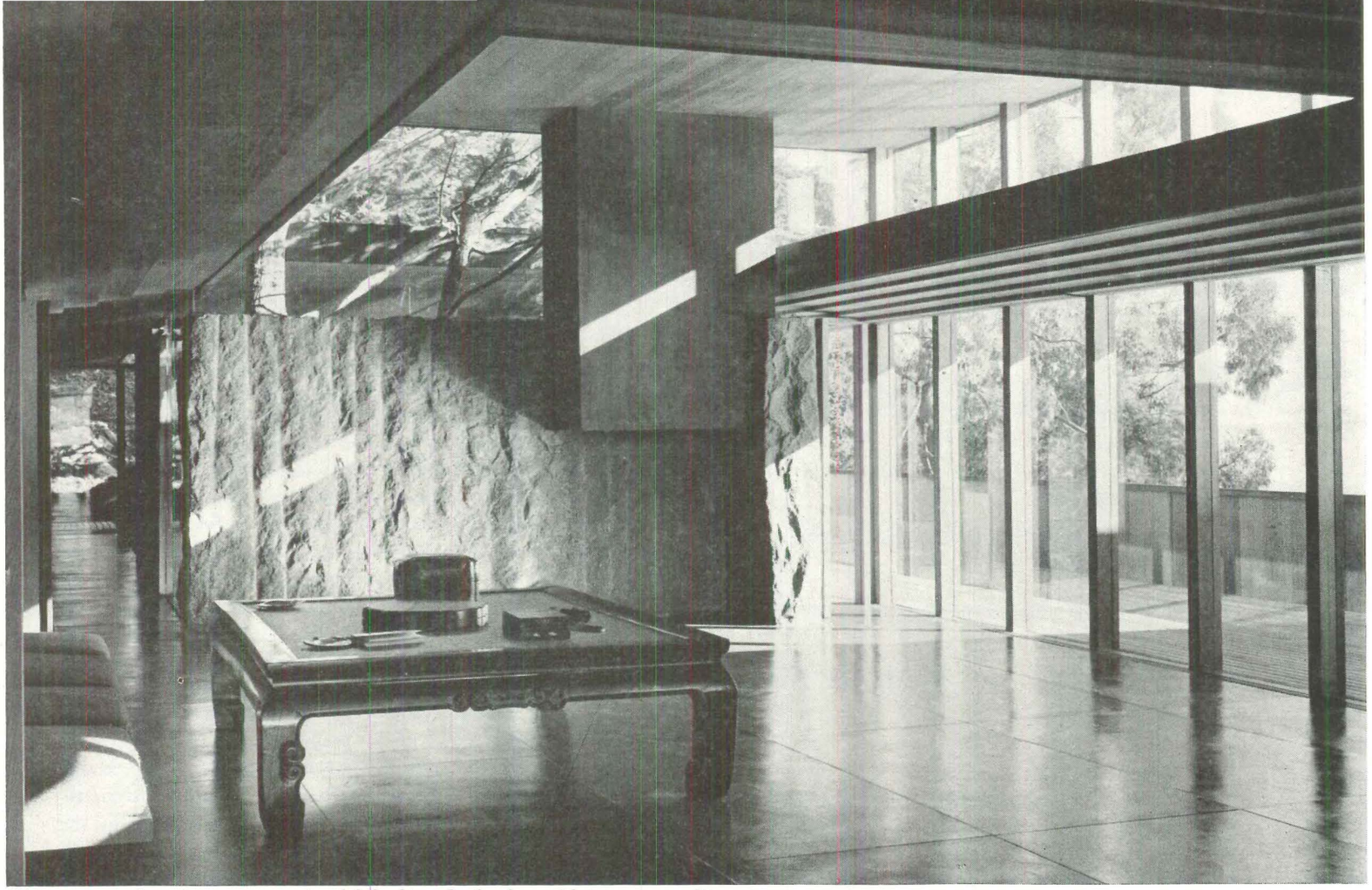
Hillmer's house platform was steel, and up in the air. He bridged the wide spans with structural shapes which he covered with cellular steel decking. This violated the classical unities of an "all-wood" house; but he noted that only steel would give permanent alignment and support for his desired "all wood look." (And only natural redwood could supply an enduring finish, soft and brilliant as silk.) So he decided to work with industry in order to live the better with Nature.



bove: The roof looks like an extension of the garden; is covered with pebbles from the beach. Right: a close terlacing of structural elements with surrounding trees. pposite: Pier foundations entailed minimum disturbance the ground. The balcony faces toward the Golden Gate.

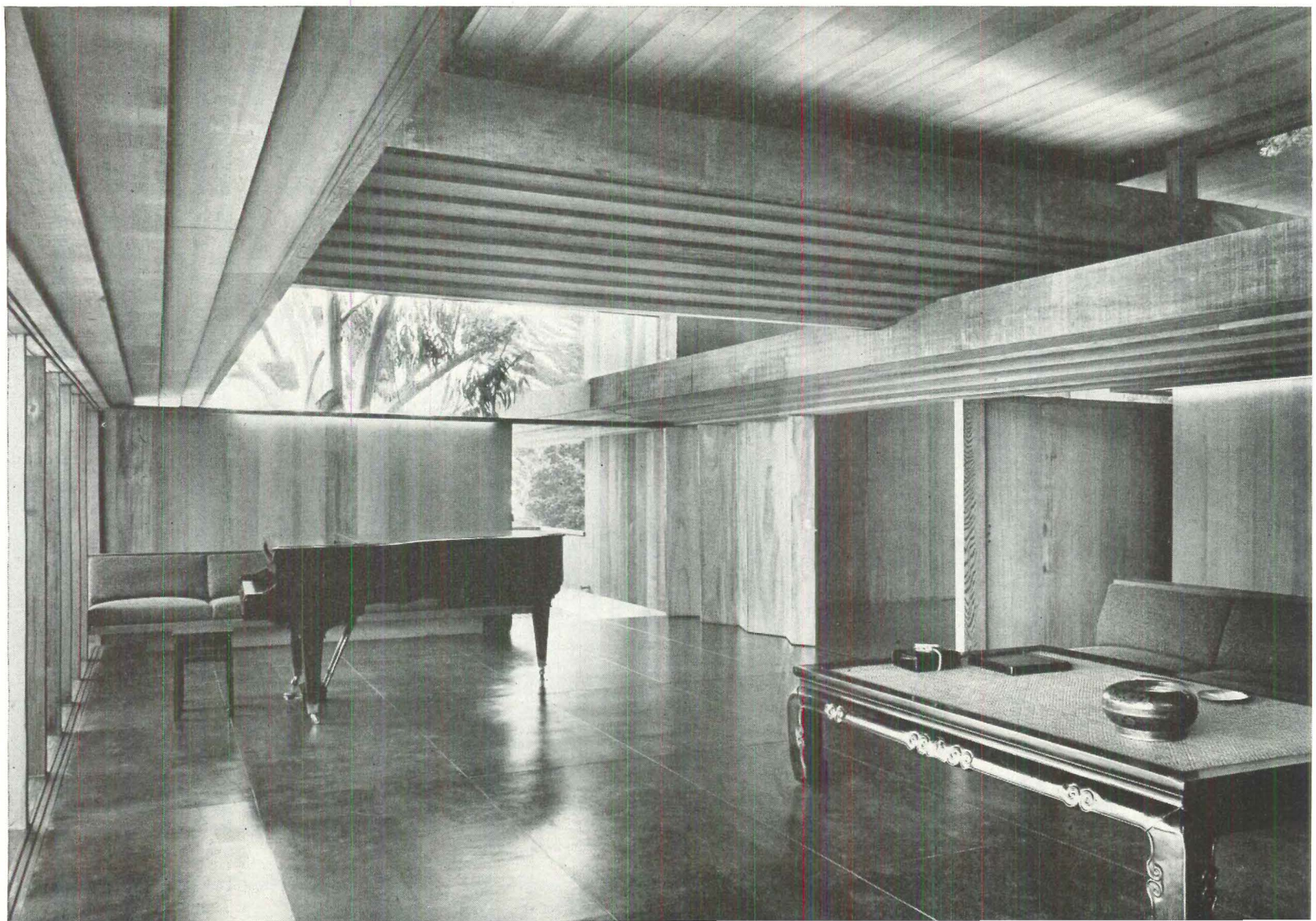
Copyright Hillmer; Photos—Roy Flamm

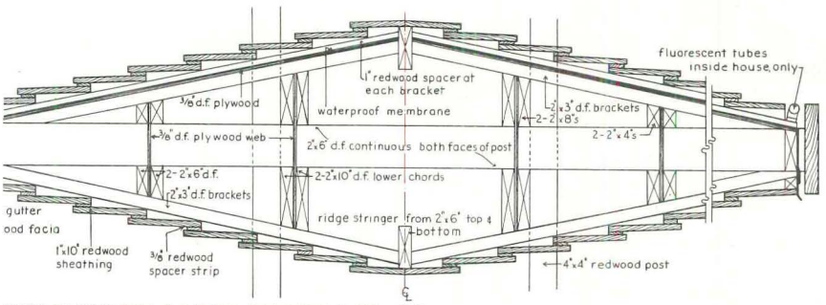




Living room ends against a vast granite slab backing the fireplace with its concrete chimney

The opposite end is a typical exterior wall built of vertical 2 x 12" solid redwood planking





ION THROUGH LARGE DIAMOND TRUSS

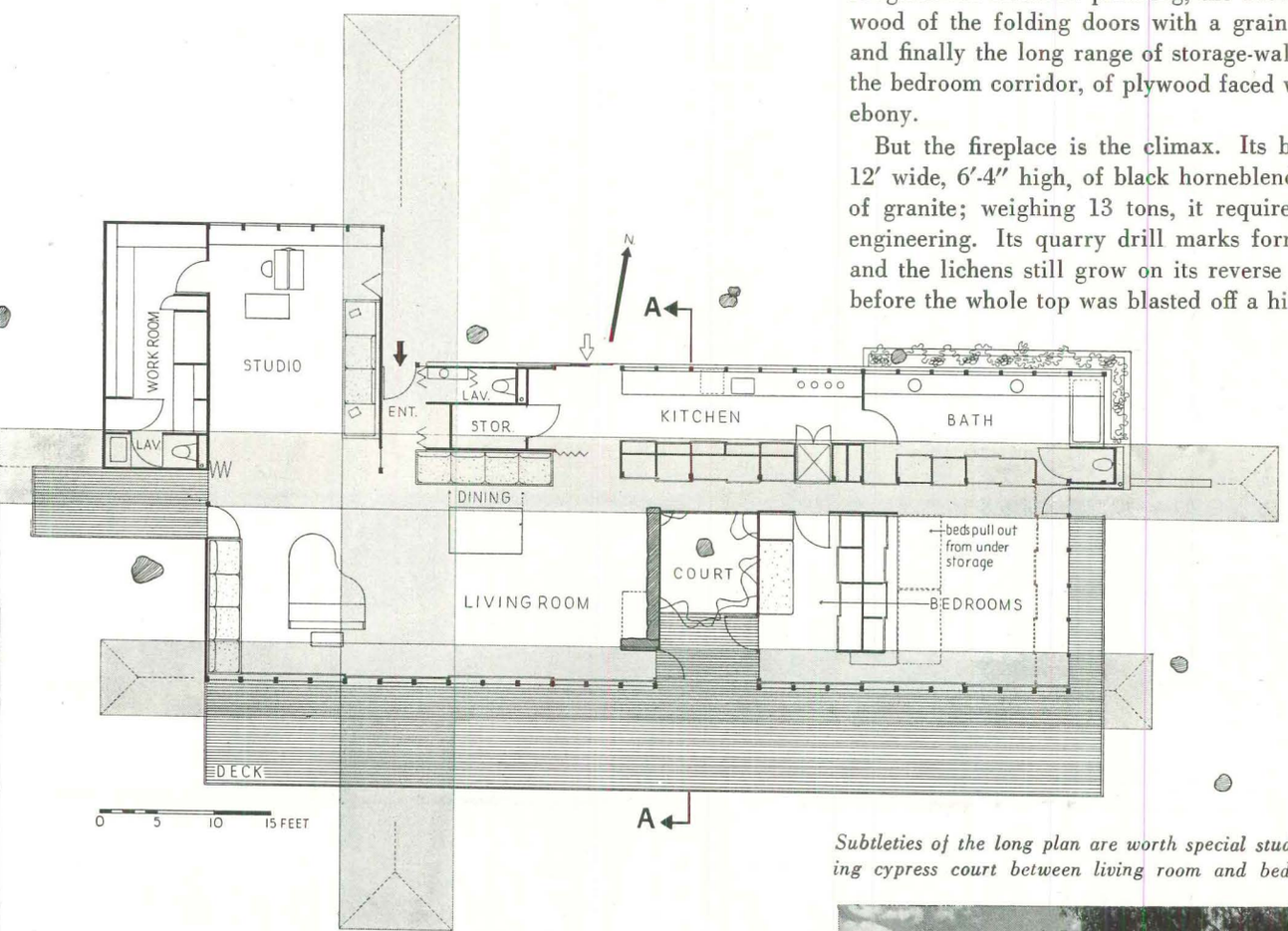
Built on a plywood web like an airplane spar, the "diamond trusses" are the structural bones of the house, the plastic bones of the composition. They act also as ducts, light coves, electric raceways; are shaded in plan below.

Just as Hillmer's effect outdoors is a close interweave with Nature, so his interior effect is a close interweave of stately space with powerfully plastic structure.

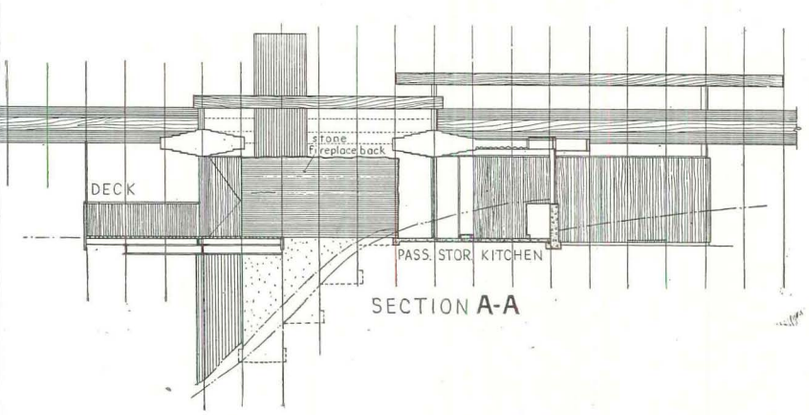
This remarkable space organization (see plan) he strung along under two parallel roof trusses that one would call "tubular" except that they are diamond-shaped in cross-section (drawing, left). They run the full length of the house and beyond; a third lies across them, starting as the entrance canopy and ending as an arm saluting the Bay (photo below).

This largeness of organization is enhanced by the special *tonality* in a low key of brown and gray, full of reserve power. Hillmer's flawless concrete floor (on its steel deck) was integrally colored with iron oxide and green chrome oxide to show a rich black, hell deep, tinged with heavy green. It is waxed and marked off into 3′x6′ rectangles by brass strips. Then there's a long range of natural wood: the great silky rough-sawed redwood planking, the brown-gray African hardwood of the folding doors with a grain like wild mahogany, and finally the long range of storage-wall sliding doors, down the bedroom corridor, of plywood faced with nothing less than ebony.

But the fireplace is the climax. Its back is just one slab, 12′ wide, 6′-4″ high, of black horneblend diorite rock, a kind of granite; weighing 13 tons, it required special installation engineering. Its quarry drill marks form a rhythmic pattern and the lichens still grow on its reverse side, just as they did before the whole top was blasted off a hill near Fresno.

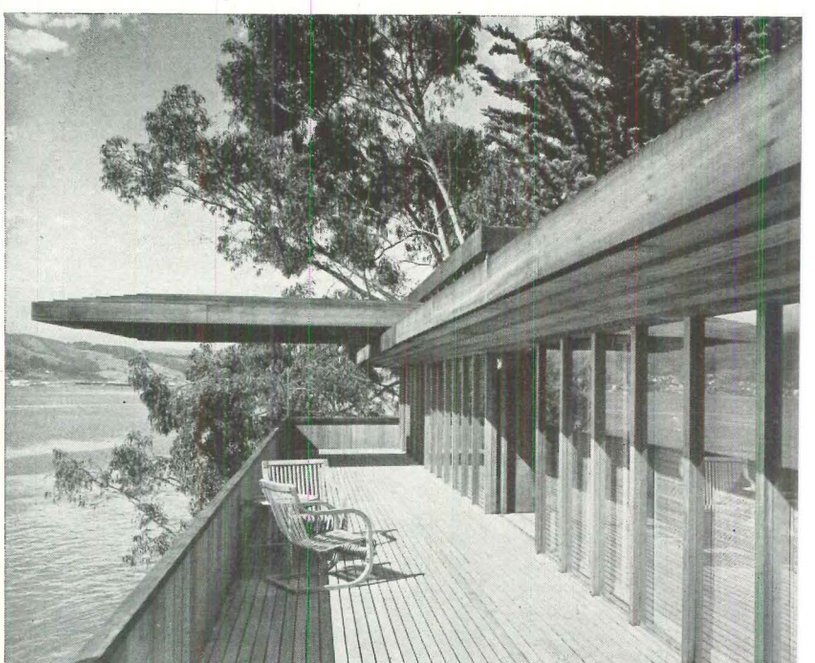


Subtleties of the long plan are worth special study. Note especially the charming cypress court between living room and bedrooms, not seen in pictures.



SECTION A-A

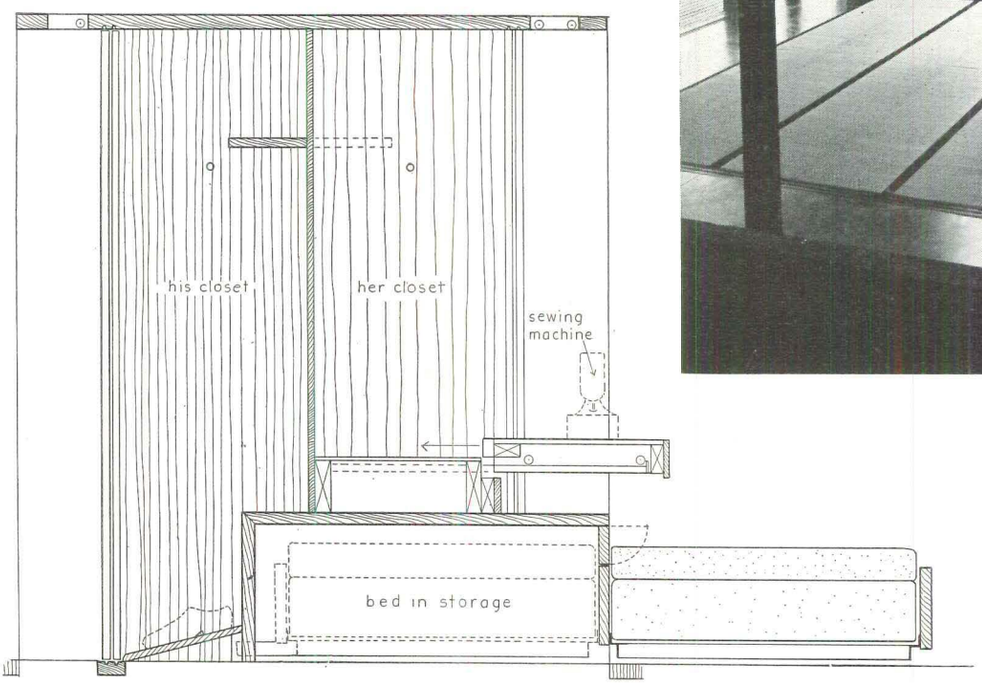
Section above shows longitudinal diamond trusses from the same viewpoint as in photo at left (across-page). The transverse truss is seen over the balcony, right. To protect the house against southwest glare, the split-wood screens behind windows are in sliding wood frames, like Japanese "shogi."



View from outside through studio shows big diamond truss sweeping through the house

Interior view shows how it enhances apparent height. Glass was cut to truss outline

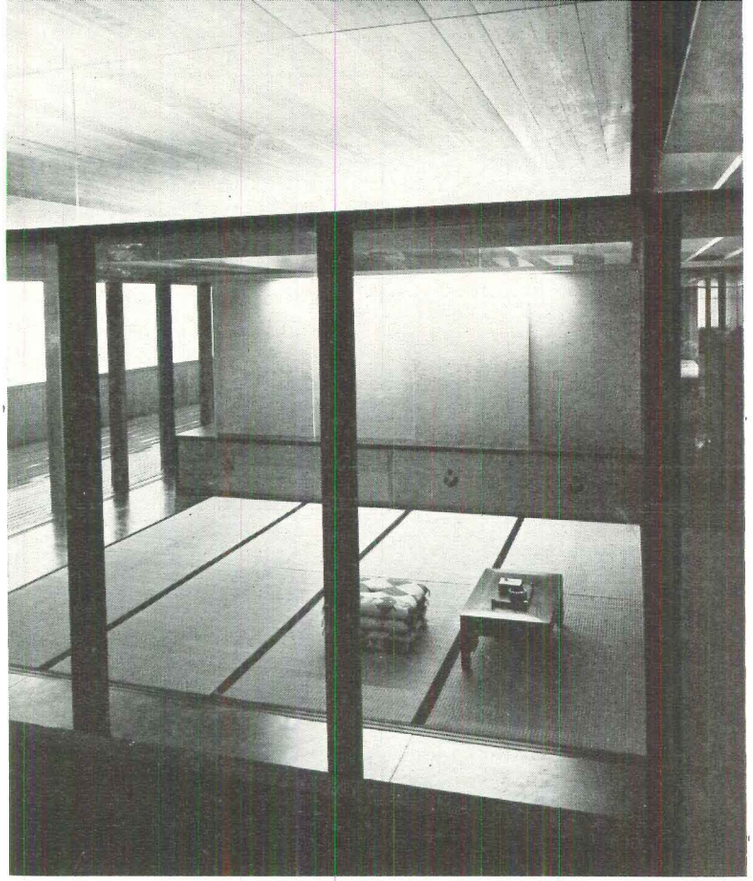
The couple who own the house had a passion for empty rooms which demanded a perfection of detailing. The husband, a top-flight magazine illustrator, liked to work in a studio as parlor-clear as the pictures show it. The search for boundless put-away space kept designer Hillmer humping. Around the corner from the studio he set a workshop for desk chores and mussy wrapping, plus books and a phonograph to accompany the day



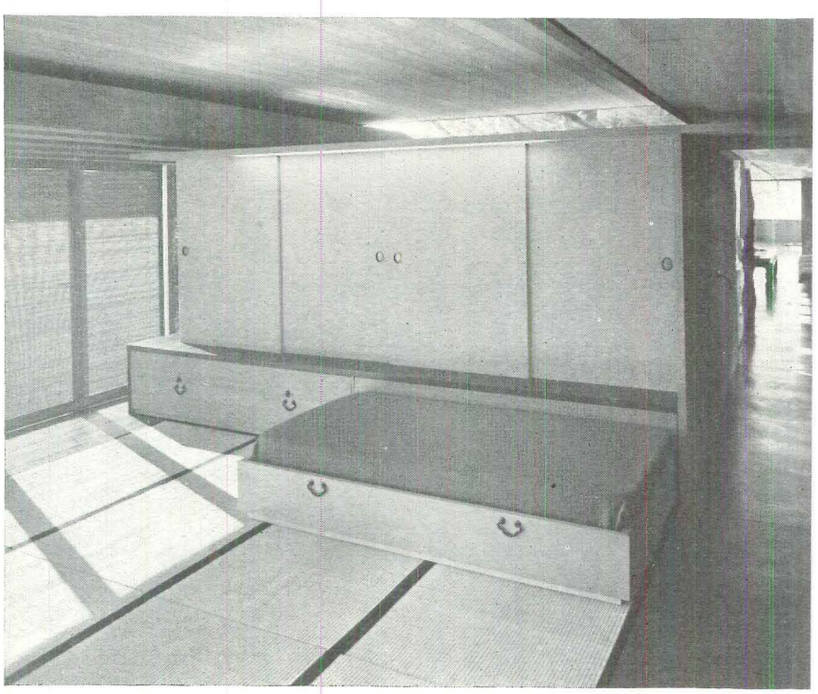
with music. The studio couch, like its living room replicas, has cushions made like those of a car with *both* springs and sponge rubber for true comfort. The African ebony stands are the same size as the cushions and interchangeable.

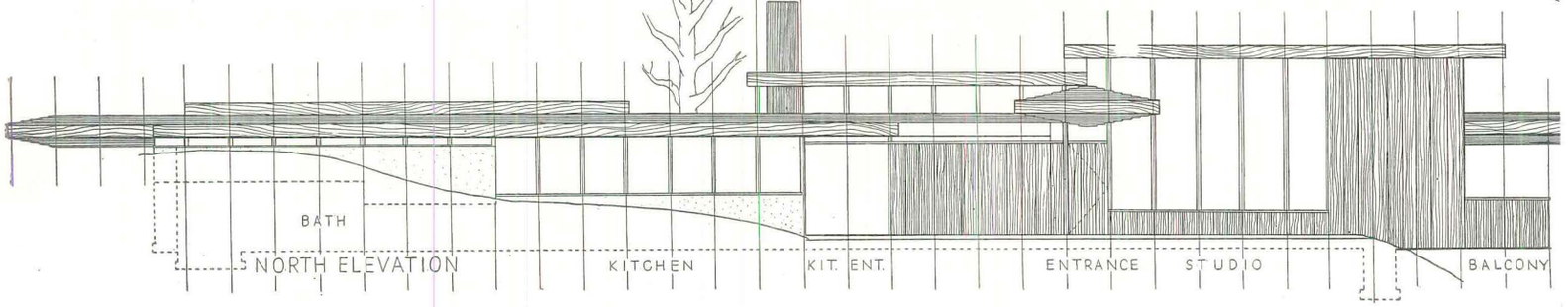
The wife was not against possessions but wanted them out of sight, like her several barrels of china which were stowed without a trace. Hillmer devised a series of storage elements which could be opened from either side with no disturbance to privacy; for example bathroom shelves that could be supplied from the bedroom. The best of the series was a 5′ storage area between the two bedrooms; the owners' twin beds could be rolled completely under. (Photo, right.)

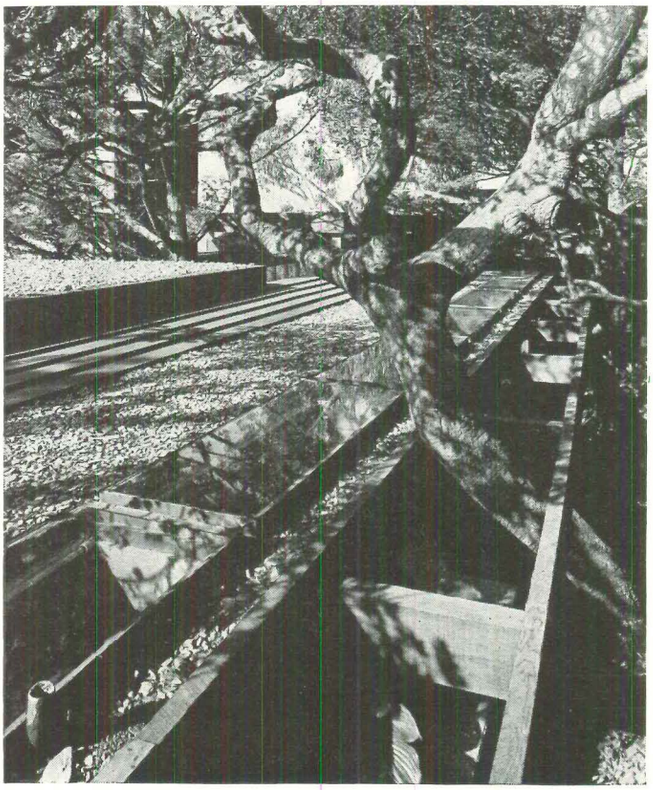
With the same thoroughness Hillmer found beautiful improvements over stock U. S. hardware. The usual round-knob door latch demands a free hand to open it (European lever handles can be pushed down with an elbow). In a hospital catalogue Hillmer found a handsome bent-down pull, designed for nurses' use, that could be worked either by hand or by hooking under it with an arm. Latches he omitted altogether, having found a rubber roller device that could be mortised out of sight in the thickness of the door. A spring pressed it against the hollow of a wave-shaped strike in the jamb, so as to hold the door positively closed; but moderate pressure would throw it open. Again, the light switches were the "push-in" type of installation—nothing but small buttons, without a plate, showing against the wood wall. By attention to such minute details too numerous to mention, Hillmer was able to create those large unbroken surfaces and that "emptiness" of space that can make an interior noble.



Section through two-way closet is taken through left end of storage wall of master bedroom (above). Even a sliding sewing machine stand has been conveniently provided. Beds slide in and out on special rollers set in tracks between Japanese mats. View below shows one bed drawn out for use; also long corridor uniting the house.



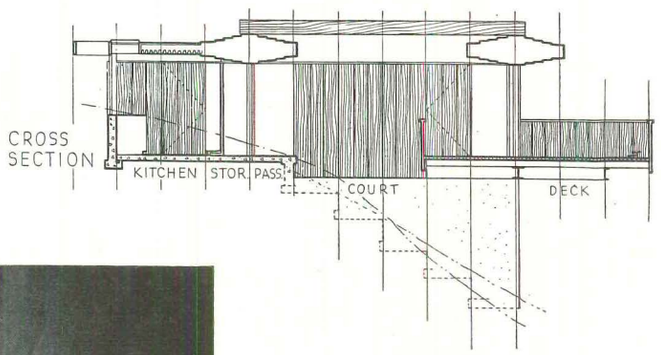




The same close care went into the "service" elements of the house, the long narrow in-line kitchen and the long narrow in-line dressing room-bathroom. They stand where the house was dug well into the hill; the garden comes to kitchen sill height, and the cook could reach out to pick thyme through the window if she wanted to. Because of this situation, a long range of skylights has been cut through the roof—skylights on which an occasional pebble lies where it was dislodged from the roof, skylights that show the sky only through the foliage of trees. Here, as elsewhere throughout the house, the electric lighting is tubular following generally the lines of the daylight source; and if juice is "wasted" that way into the out-of-doors it brings back dividends by creating poetry.

The kitchen worktop is all stainless steel, and for beautiful consistency the same material was used on special refrigerator doors. In the bathroom the washbowls are carved from solid blocks of lignum vitae; and the worktop is of beach pebbles (once again) set in concrete and waxed.

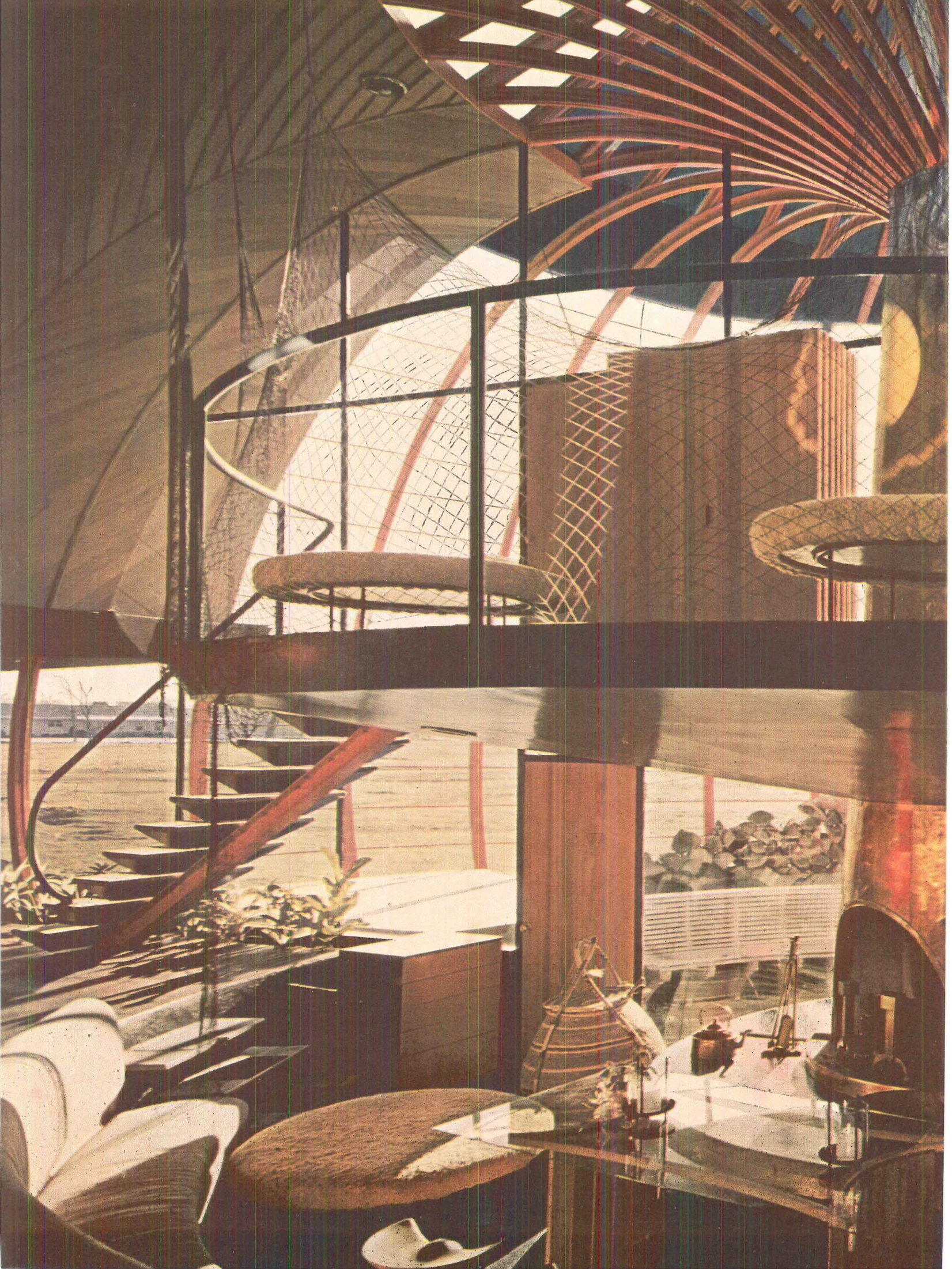
Glass sheets which, seen from above, look like something in a garden, are seen below as kitchen skylights. Large photo on opposite page is at glass entry to kitchen, (to the left) and a charming dining alcove (to the right). Its position is marked on the long elevation at top of page.





Not all the world loves a creator; but a good many people do. The house gave Hillmer headaches aplenty; the friendly builder that genius needs was not there; some details were done in a way to cause heartache. (Others were perfect.) But the conception stood, and projected itself; it had the force of its conviction. Dr. Morley of the San Francisco Museum of Art set aside a room (this month) for the photographs and drawings; Roy Flamm took painstaking pictures seeking to convey the spirit; Dean Wurster asked Hillmer to give some time at the University of California to his architectural students; even commercial suppliers gave attention to the project far beyond what was justified by the calculated return of the market—especially so the supplier of the beautiful tropical hardwoods. They all liked it because it lifted them out of themselves.





UMBRELLA HOUSE

Bruce Goff builds it with Quonset ribs and coal to raise the new Aurora

LOCATION: Aurora, Ill.
BRUCE GOFF, Architect
DON TOSI, Contractor

Out in Aurora, some 40 miles from Chicago, Bruce Goff built a round house of steel and coal to set the world afire. The first people who were burnt up were the neighbors. They called it the bird-cage, the mouse trap, the pumpkin, the tomato, the hangar. It was supported on curved ribs of steel Quonset hut framing, all painted red, converging toward the top like the ribs of an umbrella. The Samuel Fords, who own the house, promptly put a sign out front saying "We don't like your house either."

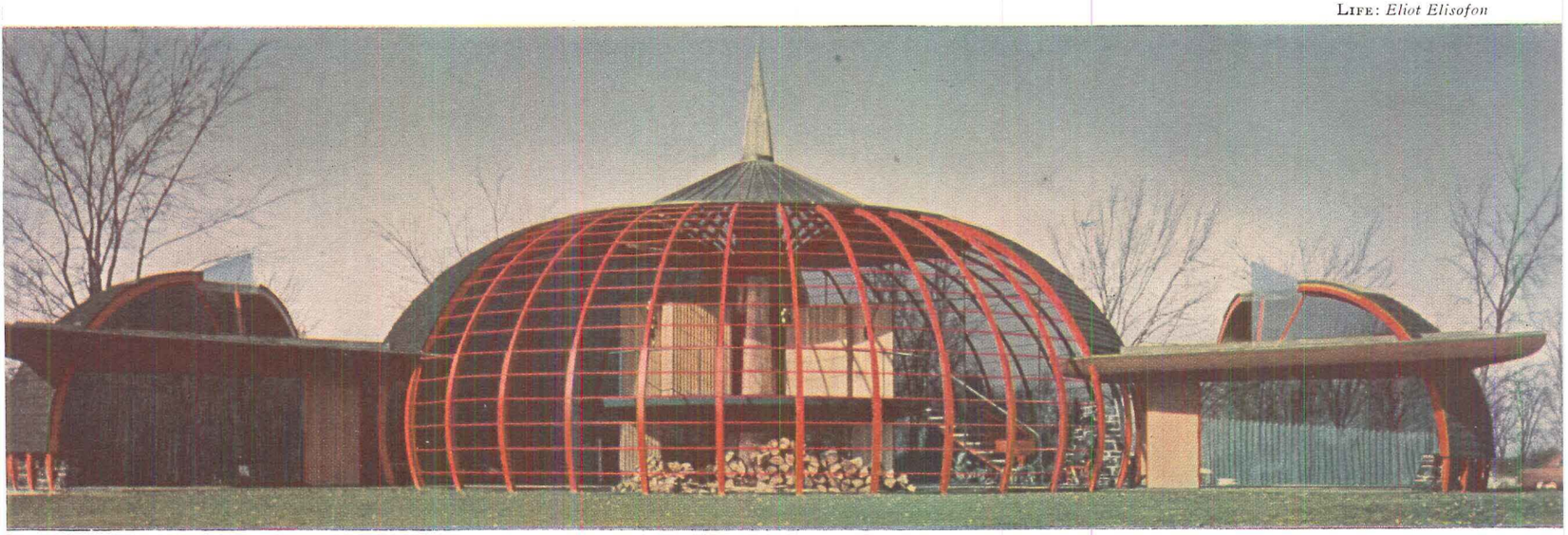
That time is long since past. The house came out a fine spangling lustrous toy and proved that an American could make a handsome dwelling space of cheese and chopsticks if he put his mind to it.

From the highway the house looks like three bulbs covered by close-packed scales of black-stained shingle. From the lawn at the rear the group of three looks like a fat sprout flanked by cotyledons—these are the wings containing the bedrooms.

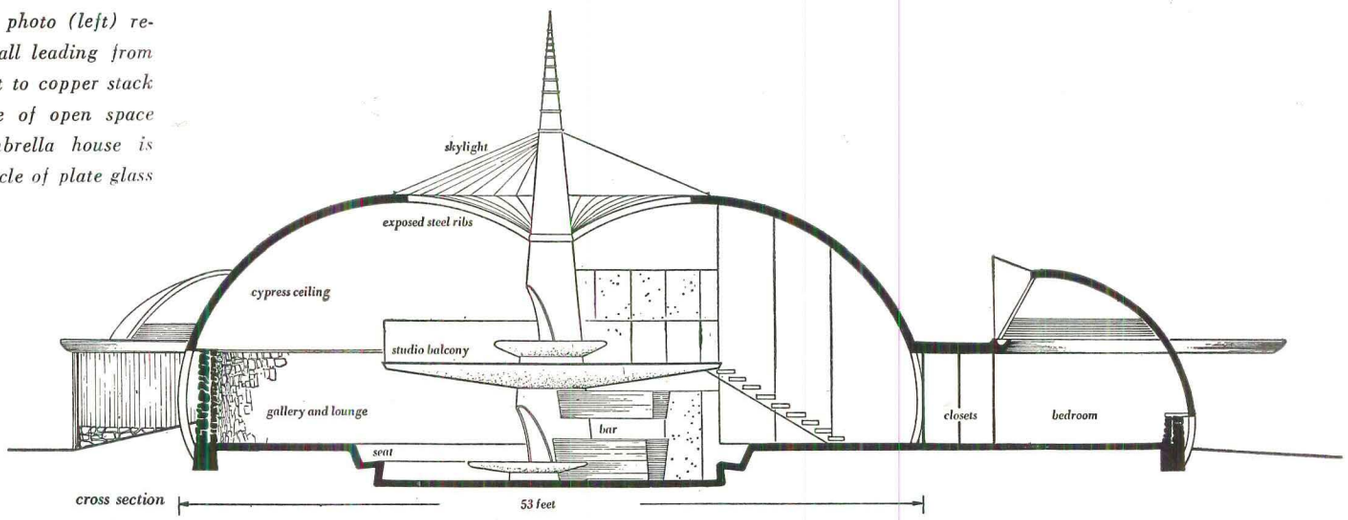
The Quonset ribs don't come all the way down—they are butt-welded to stronger bent I-beams that pull the curve inward at the base for extra zingo (photo below). The shingle covering on the side toward the street (see next page) doesn't come all the way down either—it stops short at the haunch to let you see what's behind the red spider frame—and *that* is the round wall of matt-black cannel coal, satiny of surface, and set like stone in a random ashlar pattern marked by contrasting white mortar. It carries nothing, acts only as enclosure. There are chunks of rich green in it whose nature and function are revealed when you go inside.

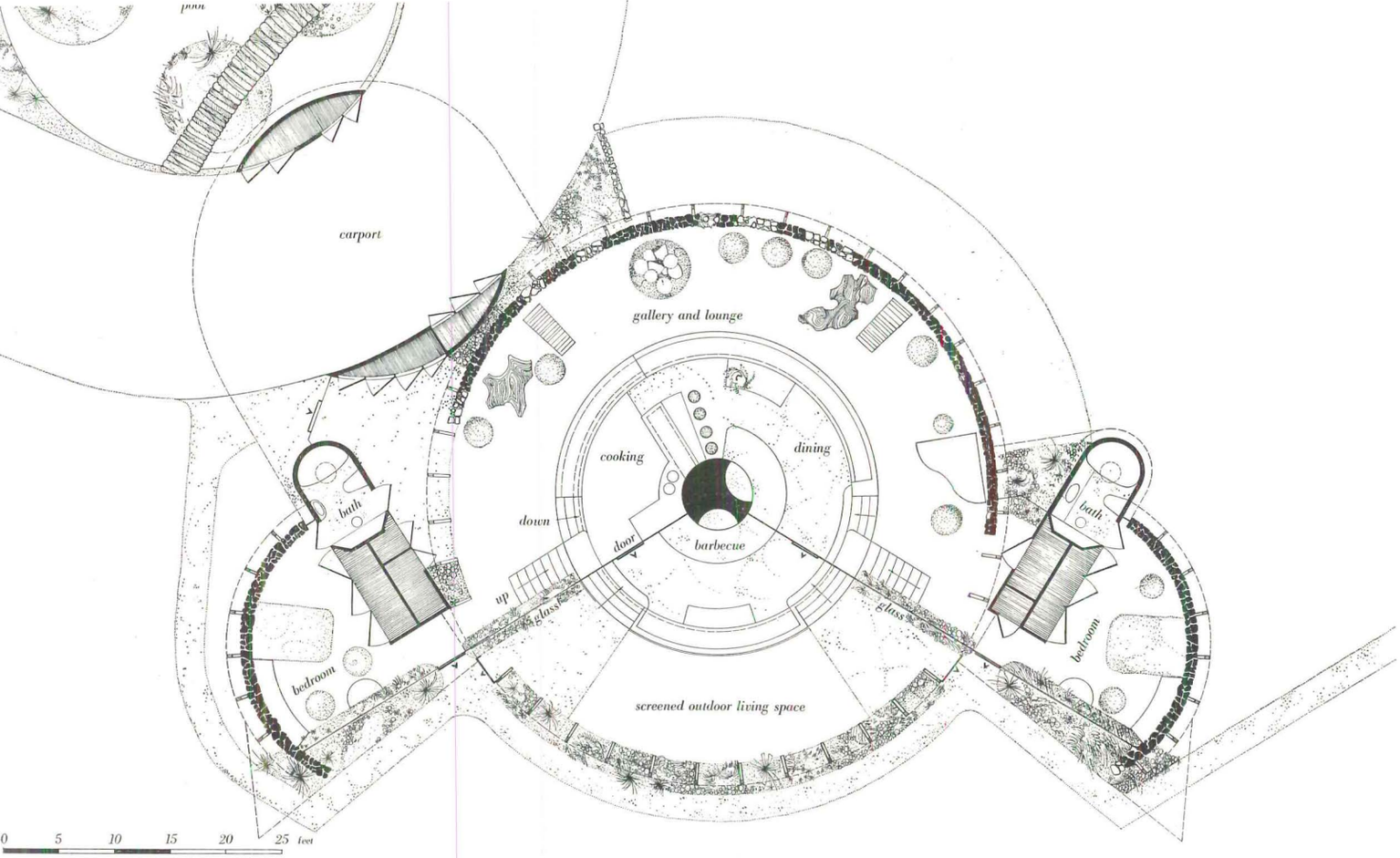
You enter under the wide carport canopy curved like a jockey-cap visor. Inside, the house fountains out from a copper balcony tree, serving also as chimney and vent stack. Loose-hanging fishnet drapes the balcony "to make the space seem softer." In the ruddy glow of the copper stack, the burnished interior is as cozy as a samovar; yet it's a little like being in the control tower of a Hollywood space ship.

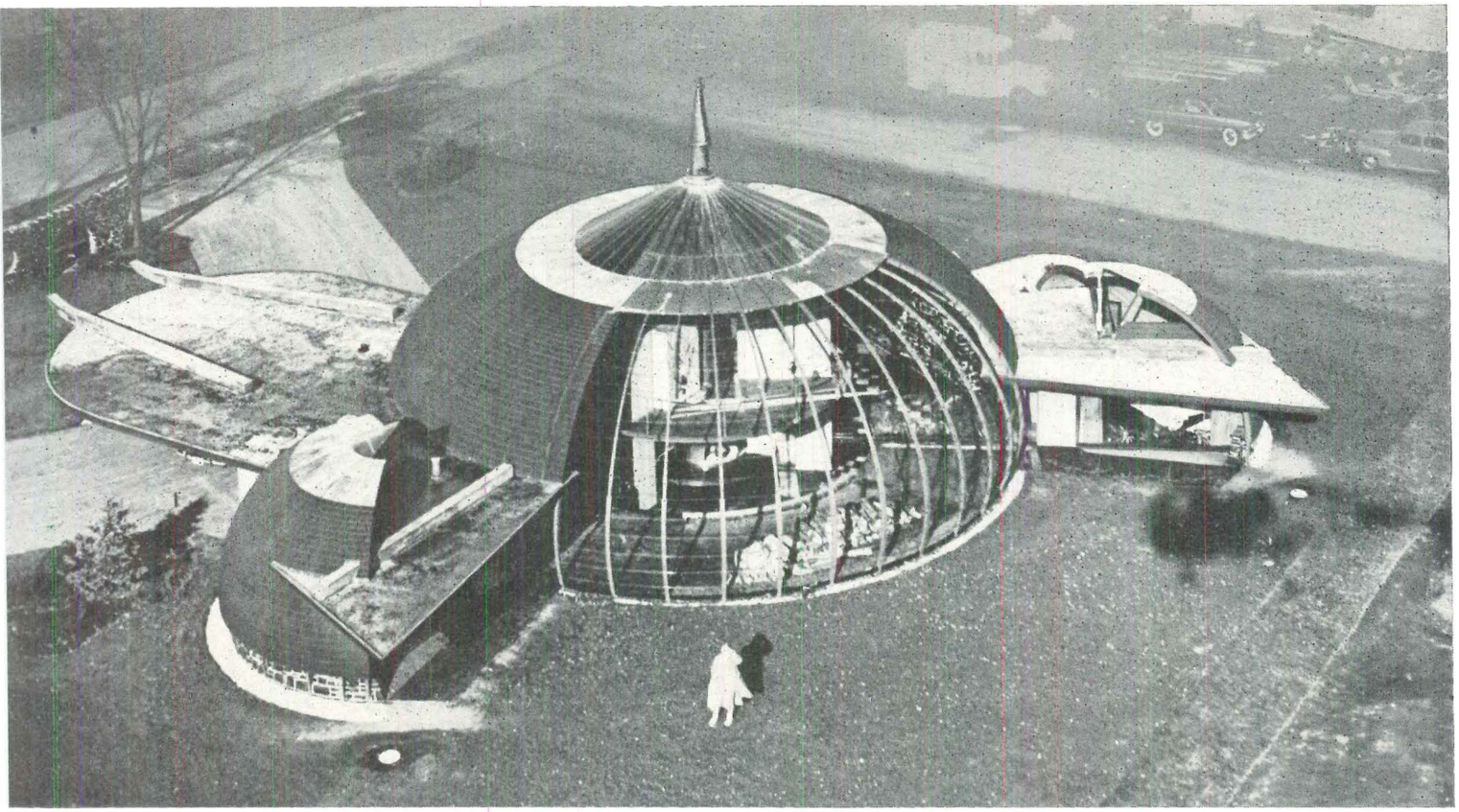
LIFE: *Eliot Elisofon*



A close look at the color photo (left) reveals the straight glass wall leading from Quonset rib at extreme left to copper stack at right. It lets a wedge of open space into the house. The umbrella house is opened to the sky by a circle of plate glass around its crown.







Nestled together like the components of an atom in its chemical symbol, the elements of Goff's globular house are closed to the streets but opened wide to the southern sun and the rear yard (foreground above). The Umbrella's steel ribs are sheathed with black-stained shingle on the outside, with diagonal lapped cedar boards on the inside (photo, right).

Inside, the round house is a dome set on a 166′ circumference (Goff considers circles sociable and friendly). With an easy grace it opens on three levels. The well or dugout around the copper tree is for activities that are intimate; in one-third cooking, in another eating or fireplace chatting. But the last third is special. It's actually not in the house though it's in the frame—cut off by glass walls like a cake slice. (That's the part seen in the color photos on both preceding pages.) It opens the house to a wedge of space from the surrounding landscape, acts as a porch with its own barbecue fireplace. (See air view.)

On the metal-edged balcony above, Mrs. Ford, director of the Chicago Academy of Fine Arts, does her painting. Her activity has filled the house not only with canvases but with furnishings rich in form, hue, and texture. Some of the furniture was designed by Goff. The emerald glow observed through random parts of the coal wall results from another colorful idea: architect Goff has built in clusters of "crullets" or waste out of glass furnaces.

In bending lapped cypress siding to get the dome's ceiling, young builder Tosi accomplished a near miracle of workmanlike precision; and indeed his skill in handling the entire performance should win him medals.

The bedroom wings are as intimate as the central space is large. Each has its bathroom with sunk tub executed in black terrazzo. The flat ceilings there, as elsewhere in the house, are close-coiled, heavy tarred rope—obtained from Navy surplus. Bathrooms are skylighted by plastic blisters; bedrooms have skylights too. The house is radiant heated.

The house has fascinated many an unlikely admirer, is said to appeal especially to purist Mies van der Rohe. No one has reported architect Frank Lloyd Wright walking by and asking: Why?



Walls of square-cut cannel coal around the living area are studded with small marbles. Chunks of glass waste called "crullets" are built into the coal wall—stained glass windows in the rough.



DEFENSE HOUSING

The large scale housing program of World War II contained large scale mistakes which must not be repeated. A look at the lessons

For the second time in a decade, the nation's housebuilders are faced with the urgent demands of a defense housing program. There are two ways the program can be carried out. One is to repeat the World War II experience of waste, confusion and hundreds of thousands of mediocre dwelling units that will clog up our housing supply for a generation. The second is to do the job in an orderly, economical fashion so that the whole U. S. housing pattern is strengthened, not sabotaged, during the mobilization crisis.

The chances for avoiding World War II mistakes are still good. For one thing, defense housing needs will be smaller, more manageable this time. At the end of this year, only 4 million workers (out of a 60 million labor force) will be in direct defense work. And most of them will work in the same towns they live in now. There won't be a repetition of 1942, when 6 million Americans packed up and moved from one part of the country to another, causing the greatest housing headache of all time. There will be headaches this time—but they will be localized and much less aggravating.

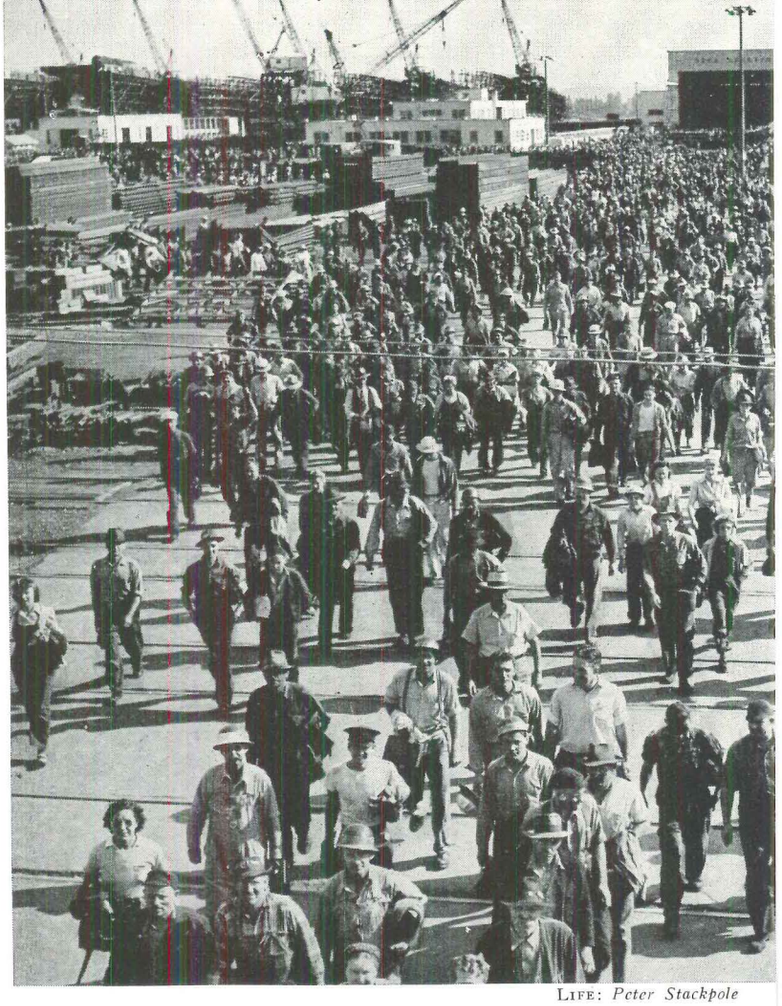
What can be learned from World War II's experience to guide the new program? To find out, the editors of THE MAGAZINE OF BUILDING *have reviewed the last war's mistakes, then drawn up the lessons to be learned. Briefly, they are:*

- *Housing must be considered a top-priority defense tool.*
- *The defense housing program should be carried out by private builders.*
- *Temporary housing should be kept to a minimum.*
- *The shrinkage in house sizes should be checked.*
- *Defense housing should be no excuse for bad design.*

Each of these points is developed fully below. Also included are field reports on two U. S. cities which are already feeling the defense housing pinch—Aiken, S. C. and Wichita, Kansas. Each reflects the problems which will face many another U. S. city as its factories accelerate their defense production.

Lesson No. 1. Housing is a primary defense-production tool

Here the lesson of last time is clear. Almost all the confusion and mistakes of World War II housing program stemmed from the unwillingness of the War Production Board and other planning agencies to recognize housing as a top priority need. Their attitude was that housing would "happen" once a new plant was built or an old one reconverted. It did not happen, of course. Not until the Spring of 1942 (when the housing shortage was crippling production far more effectively than a battalion of German saboteurs) did WPB set up a housing division. Even then the confusion persisted. Result: defense housing was 50% behind schedule by mid-1943.



LIFE: *Peter Stackpole*

It would be hard to measure the harm caused to the war effort by this undervaluing of housing. The famous example was Willow Run, the mammoth Ford-operated bomber plant outside of Detroit. There was no housing available near the plant when it was finished early in 1942. Not for months after it was finished was a contract let by the government to get some built. This time-lag was one of the major reasons why the big plant didn't produce a single plane until October 1942.

This time there are healthy indications that mobilization planners have a livelier understanding of housebuilding. NPA promises that housing would be more closely coordinated with plant construction. In fact the bottleneck is less likely to be housing but the lack of extra utilities and facilities which are now being held back waiting for Federal funds.

The current theory is that NPA will request the necessary housing from the Housing & Home Finance Agency. HHFA would then be responsible for getting it built either by private builders or through its own public housing program. How effective this loose liaison between the two agencies will be remains to be seen.

Up to now, HHFAdministrator Ray Foley has been successful in selling Congress and the various housing lobbies that if they leave everything up to him the program will work out. Some Washington observers have their doubts, pointing out that HHFA was not set up as a procurement agency. Said one last month: "HHFA is, aside from its public housing program, an insurance company. It thinks and acts like an insurance company." Some felt NPA should be given the power to *order* HHFA to produce housing. But, for the present, Ray Foley is riding high.

Lesson No. 2. The new defense program should be carried out by private builders

Of the 1.9 millions units built during World War II, less than half (530,000) were privately built. The rest was government housing—most of its "temporary" units which are still standing. Despite

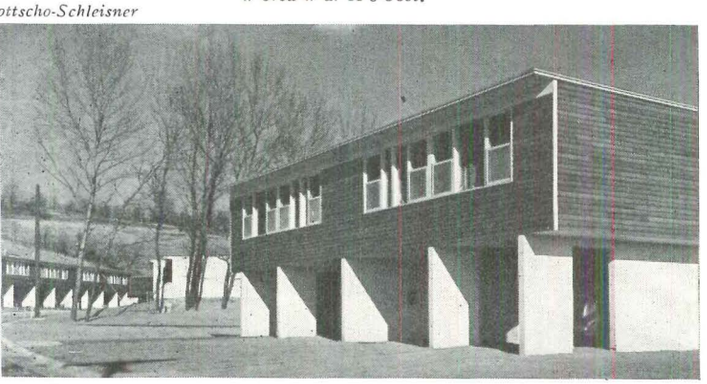
pious declarations by government housing officials before Pearl Harbor that private builders would get the job, they were soon relegated to a minor role. By the end of 1942, the private industry had been virtually closed down.

This was partly the fault of the builders themselves. The industry was still dominated by the carpenter-builder who could not adapt his small scale operations to the mass housing that was needed. A lot of war housing was built by the government simply because local builders were not equipped to do the job. A second reason is that few builders were interested in building rental housing—and rental housing was what war workers needed. The builders figured, incorrectly, that every big war worker rental job would be empty as soon as the war was over. Despite the liberal mortgage provisions of Title VI's 608 (which was originally intended to expedite defense rental units), only 38,000 units were built under 608 before V-J day. (Many builders did build and rent small detached houses during the war, then sold them at a neat profit.)

Greatest stumbling block to private-builder participation in the defense housing program was Federal red tape. Even if he was willing and able to build, he found himself boxed in by the government's inept handling of the materials program. The situation was not improved by the theoretically strict priority system which was set up early in the war. A builder of defense houses soon discovered that a priority was not a guarantee but a license to hunt—and there was little game to be bagged in the materials preserve. Housebuilding becomes highly unprofitable when a big operation is stopped for weeks waiting for nails or toilet fixtures. The result: most builders gave up the fight. In July 1942, when they should have been in high production, FHA applications were off 50% from the previous July. The whole war housing program was soon dominated by temporary public housing.

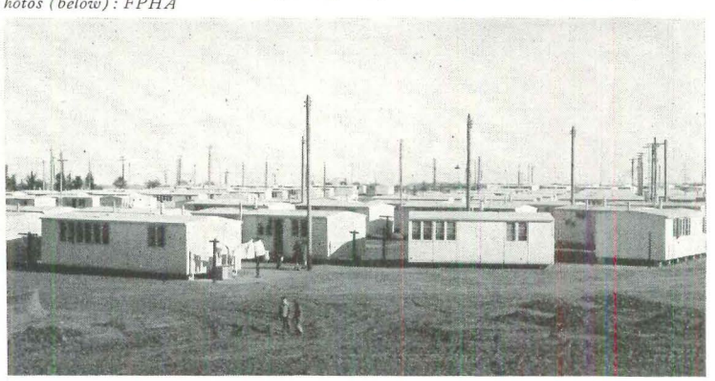
Lanham Act permanent housing at Coatesville, Pa., designed by Architect Oscar Stonorov, was among World War II's best.

ottscho-Schleisner

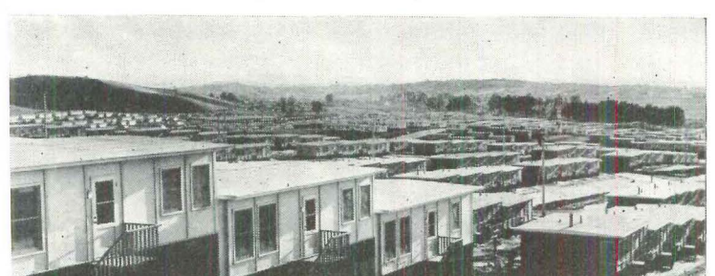


Low cost portable houses in the West. Although temporary, they are still in use—a country slum.

hotos (below): FPHA



California "temporary" project is typical example of low standards of World War II housing.



There is no good reason why private builders should not handle most of the defense housing this time. Given the opportunity, they can do the job quicker and at lower cost-per-unit than the government. (During the last war, many builders were putting up permanent units at less cost than the government's temporary ones. See picture panel on p. 125 for a striking example of this.) This time, too, there is a large group of big operative builders who can handle any project the mobilization planners want built, no matter how big.

Will these builders be tripped up again by a fouled-up materials situation? Although there are still no guarantees, the situation is more hopeful than last time. In Washington, HHFA has been named a "claimant agency" under NPA's materials-allocations program. This meant simply that the builders will have a friend-in-court when NPA planners hand out short-supply materials to various segments of the national economy. In the battle for materials, HHFA is in a much stronger position now than the wartime National Housing Agency ever was. This time the housing agency not only had a clear priority on materials but also a chance to get them.

Lesson No. 3. The temporary housing program should be severely restricted

Most controversial aspect of World War II housing was the government's temporary housing program. The reason, of course, is that the houses weren't temporary. Of the 446,000 wartime 'temporaries,' only 9,000 have been demolished. And, despite all efforts of builders and realtors to make the government rip them down, the temporaries will probably remain standing for many more years.

It is easy now to second-guess and say that the government should not have built so much temporary housing. But in the desperate Spring of 1942, when we were losing the war, there seemed to be no other alternative. Both private and public permanent housing was being built too slowly. The National Housing Agency decided to shift to a temporary program—dormitories, trailers, row housing and single units. The temporary projects were, for the most part, poor housing. They were also expensive. It cost $2,745 to put up the average temporary housing unit. But for all their faults, the 'temporaries' served the immediate purpose.

How can a similar flood of dumpy little houses be avoided this time? The answer lies in restricting temporary units only to those defense projects which are clearly temporary. This restriction was written into the Administration's housing bill now before Congress. The rest of the housing should be permanently built and where there is any doubt the choice should go to permanent housing. (There are few areas where more good housing is not needed, war or peace.) Private builders in defense areas should be given firm assurances that sufficient materials and mortgage credit will be made available for their houses. These encouragements should be enough to prevent the backlogging of housing shortages which, in the last war, was the immediate cause for so much temporary housing.

Where temporary housing is needed, it should be permanently constructed and demountable. Here again, the lesson of last time is clear. "Temporary construction" is a myth, as the continued presence of so many wartime units testifies. It results in housing that is too poor to live in and too good to rip down.

The measure of a temporary unit should not be substandard construction but *portability*. When a temporary defense installation is closed down, its housing should be salvaged. The U. S., whose mi-

(Continued on page 188; See next page for Case Histories)

AIKEN, S. C., with its population to be doubled by the new H-bomb plant, has a tough housing problem and, as yet, no real solution

The nation's top priority housing shortage is in the Aiken-Augusta area—site of the Atomic Energy Commission's great Savannah River hydrogen bomb project, now abuilding. What this government project will do to that most select of all quiet, horsy resorts and the fine homes on Whiskey Road is no part of this story, which will stick to the more pressing problem of how and whether the defense workers will be housed there.

Two months ago only nine new houses were being built in Aiken—just about the normal production for an easy-going Southern county-seat with 7,000 population. Within a year, however, the Aiken-Augusta area will have to house at least 20,000 construction workers and their families. And within two years, 8,000 permanent plant workers will have arrived.

Would Aiken be able to house these people? Here are some encouraging indications:

1. AEC has turned the housing job over to private builders, instead of putting up a "company town" as it has done with its other big projects. (AEC has decided to avoid the headaches and criticisms involved in building and operating another town like Oak Ridge, whose construction was entrusted to the Army's Corps of Engineers for the purpose of preserving secrecy and obtaining scarce building materials—two factors which are not so important today.)
2. At least half a dozen big builders are ready to build all the houses AEC would need.
3. HHFA has relaxed Regulation X in the area.
4. The land speculation which had swept the area earlier this year has been deflated to manageable proportions.

Wanted: a master plan

But there are two other factors which threaten the chances for doing a good housing job in Aiken. One is the lack of any orderly plan for developing the region. The other is the prospect of serious delay in expanding such community facilities as schools and hospitals. These two problems must be solved if Aiken and the other towns around the new AEC plant are to be developed as an intelligently integrated industrial area instead of becoming just another dismal example of boom-town blight.

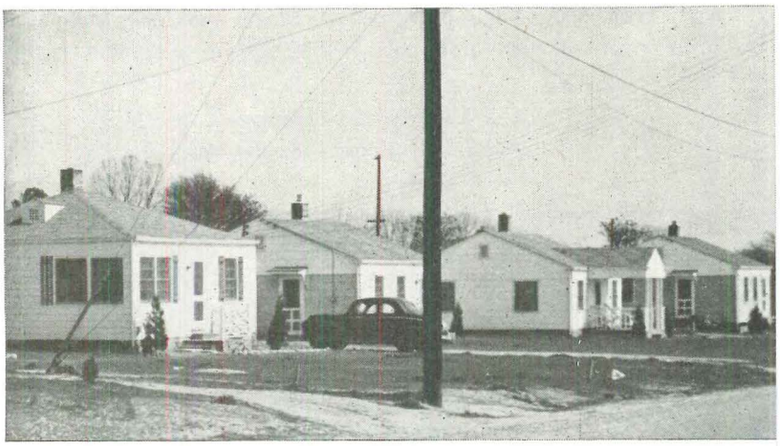
It was precisely because the Savannah River site offered such good planning possibilities—both industrially and in terms of employee housing—that AEC picked it. It is a semi-rural area, almost unspoiled. Although the 250,000 acre plant site is isolated for security reasons, it is close enough to at least four "satellite towns" so that plant workers can commute by car (see map, above). Four-lane highways will connect the plant and the towns. Augusta, Ga., with a population of 71,500, will be the metropolitan center for the area; the other towns will be primarily dormitory suburbs. The overall concept has attracted town planners for a generation—a decentralized plant separated by a greenbelt from the communities where its employees live.

Whether AEC's general plan will work out successfully depends on how quickly planning standards are applied to the region. Right now, there are very few. Only Augusta among all the towns has a planning and zoning board. The others are wide open for haphazard development. Aiken recently began to remedy the situation by hiring an MIT economics professor to do a month-long community survey. He was paid $1,100. For a town whose population will double in the next two years this was a half-hearted approach to the local crisis. So far there has been little coordination between the towns in the area, mainly because they have neither the money or the facilities to work on this level. All of them are waiting for the Federal government to provide adequate funds for planning purposes.

Also wanted: community facilities

The lack of community facilities was also tied up in the wrangle over the new Defense Housing Bill. Each of the local towns is looking for Federal funds to finance the additional hospitals, schools, streets and other utilities that are needed for their expanded populations. Until the bill is passed, little will be done.

Aiken provides a good example of the chaos that would result if funds for community facilities were not provided quickly. Within the next year about 10,000 construction workers and their families will settle in and around Aiken. Later their places will be taken by 2,500 permanent plant employees and their families. In the case of

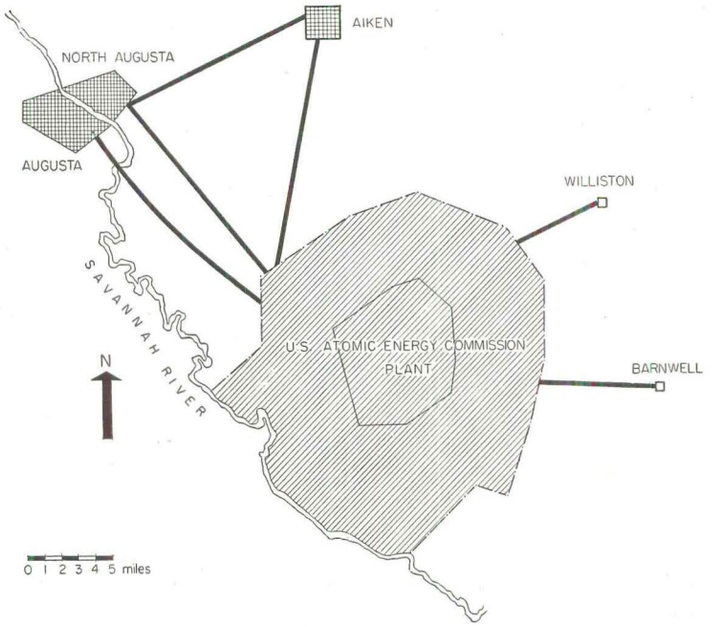


the construction workers, the town's facilities will be handling twice their present load. At present, there are only 93 hospital beds for the whole of Aiken County. The schools are already overcrowded and the school districts are having trouble keeping teachers because the pay scale is low. Sewer lines are barely adequate for the present population.

To handle the expected population increase, Aiken has set up a $7.8 million expansion budget. Most of this ($4.5 million) will be used for new water and sewage facilities. The rest will be divided among new schools ($1.6 million), more hospital space ($600,000), a new fire station, street improvements and more recreational facilities.

The most immediate threat to housebuilders working in Aiken and other local towns is the shortage of utilities. The water situation is particularly acute in most places. Augusta's water supply was being used to capacity this past December—normally a low water use month. Unless the city water plan is expanded quickly, rationing will probably be necessary this summer. Also serious is the lack of water lines for new subdivision operations. In North Augusta, Builder Fred Bible had to construct his own water main directly from the town reservoir to insure a proper supply for his new 265-unit development. It cost him $30,000 to run the 9,000 ft. long main.

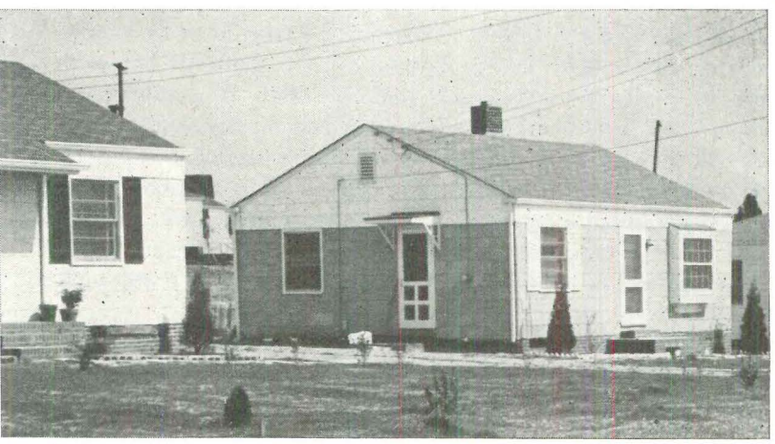
Meanwhile, with preliminary construction already started on the big AEC plant, the towns are faced with the job of providing housing for 20,000 incoming construction workers. (Another 15,000 will be recruited from the area.) Under present plans no temporary housing will be built for this army of workers. The E. I. duPont de





LIFE: *John Dominis*

Aiken's main street is jammed with cars these days—the forerunners of the automobile invasion that will start this summer when thousands of construction workers arrive in trailers. At left is shown a new row of typical builder houses.



Nemours Co., which is building the plant, has told local officials that they can expect most of the in-migrants to bring trailers with them. The rest will double up in rented rooms. In relying on this make-shift arrangement, local towns hope to avoid the blight of temporary housing projects. (But they will not avoid, for the time being at least, the equally distasteful blight of bunched-up trailers.)

Big builders to the rescue

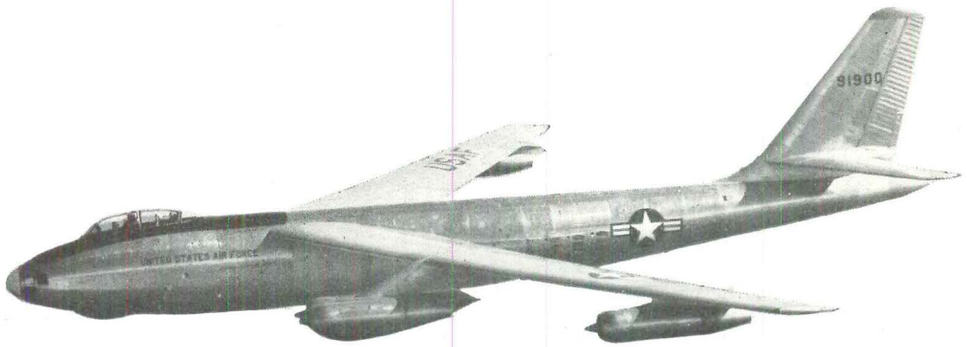
Providing housing for the 8,000 permanent H-Bomb plant workers is a less acute problem because most of them will not show up for 18 months. This allowed a little leeway for planning. Already dozens of builders and prefabricators from all over the country are investigating the possibilities of building houses in the area. Among them: Long Island's Levitt & Sons, Los Angeles' Mark Taper and such big prefabricators as Gunnison Homes and National Homes. The Levitts have already proposed a "new town" project, modeled on their Landia project (THE MAGAZINE OF BUILDING, Feb. '50) but to be built for rent rather than sale.

If the Levitts did bring their neat, low-slung Landia house to South Carolina, they would raise the level of house-design standards in the area. Most of the other builder houses are the same stiff, stock-plan models that FHA and the banks have long since enshrined as "safe design." The H-Bomb plant employees will spend their working hours in a factory that is, among other things, a tribute to careful planning and functional design. But after work they will go home to little houses which, in their design and construction, exhibit neither of these virtues and offer none of the benefits of better living the better architects and builders have been working out in recent years.

For the time being, local firms will handle most of the house-building in the area. The Knox Corp., a large prefabrication firm in Richmond, Ga., plans to operate in Aiken and North Augusta, and J. C. Greens, a Greenville, N. C. builder, is coming to Aiken. Almost all builders plan detached small houses. The Atomic Energy Commission thinks that most of its employees will want to buy rather than rent. (It has proposed, however, that the Wherry military rental housing bill be extended to its installations. At Oak Ridge everybody rents from the AEC.) Since most of the H-Bomb plant people will be technicians, their income level will be slightly higher than average. But most builders are programming their houses for sale in the under-$10,000 price bracket.

Land speculation

When the project was announced last November, a wave of land speculation threatened to kill any chance for building low cost houses. In the first weeks after the announcement, options on South Carolina farmland that would not have brought $100 an acre previously were being traded at five times the price. Since then, however, this Klindike atmosphere has cleared. "Everyone lost his head for a while," says Adrian Sherman, Augusta realtor, "but now we see it all a little more clearly." Realtor Sherman recently bought 250 acres adjoining a highway on the way to the plant for $300 an acre. His client wants to build houses there in the $10,000-$15,000 class. Says Sherman: "We would have paid double that price three months ago, but now we don't have any trouble getting land at the right figure."





Boeing-Wichita Photo

WICHITA, the biggest boom town in the country, has a housing shortage, but local builders think they can handle it themselves. But, they count on the doubling up of 6,000 families

Six months ago, the Wichita Chamber of Congress Bulletin called attention to 500 empty rental units in town. Last month the Chamber's housing committee was holding special meetings to figure out ways to handle the city's housing shortage. This 'quickie' shortage was a rough measure of how fast Wichita had zoomed ahead as a key defense production center.

Famed as a producer of World War II's B-29 bombers, the self-styled "air capital of the world" is now turning out the sleek, swept-wing B-47 strato-jet bomber (picture, above) which can carry an A-bomb further and faster than any other plane. The big production line at Boeing's mammouth Plant No. 2 on the east side of town is all tooled up. Forty-five smaller factories and shops around Wichita are subassembling B-47 parts. Aircraft plant employment is already 1,000 greater than World War II's 29,000 peak.

Wichita's housing problems offer a very pointed example of what can happen to other U. S. cities as their defense industries expand. In the next two years Wichita must make room for 50,000 more people—a thumping 25% increase in its population. This year alone it expects 30,000 newcomers. Getting enough housing (not to mention additional classrooms for 10,000 kids and extra hospital beds) will be a hard pull.

In World War II, Wichita met an equally severe housing crisis with 6,000 "temporary" public housing units built out near the Boeing plant. (Most of them are still standing.) This time, local builders think enough housing can be provided without direct government aid. Says young (30), aggressive Willard Garvey, biggest builder in town: "We could have done the job ourselves the last time, too. Our builders were selling houses for as low as $2,400 in 1942 while the Federal government was putting up slums for $3,900 a unit. If they leave us alone, we can put up enough decent housing this time."

3,500 new houses for 10,000 new families

Whether Wichita can avoid another round of government housing this time remains to be seen, however. Although 10,000 new families are expected this year, Garvey and other builders were scheduling only 3,500 new units. Only 1,000 of these will be rental units—which is what defense workers most wanted.

Why such a discrepancy? The builders believe they have good reason for scheduling less than 4,000 units this year. For one thing, they do not think that many defense workers will buy the new houses or rent the new apartments. These will be taken over by "natives" moving out of older houses downtown. It is the older houses that will be rented to the aircraft workers. With some doubling up about 4,000 new families could be handled in these vacated units. The other 6,000 new families would be taken care of, by and large, by doubling up in "fixed-up apartments" in older houses. (The exceptions would be those who came to town in trailers. Wichita's trailer camps have been jampacked for months. Late arrivals are being parked in back yards of suburban homes on a $20-and-up monthly rental arrangement, not including utilities.)

Doubling-up rather than new housing is therefore what Wichita wants to offer the bulk of new residents. Local realtors thought this solution would satisfy the average defense worker since he wouldn't be tied down to a mortgage or a lease. And it would be even more satisfactory for the realtors themselves since they did not want to

LIFE: *Margaret Bourke-White*



World War II housing: Plane view war housing project (above), built as a temporary project in 1942, is still standing. Typical two-story barracks were built for $3,900 a unit. At the same time, Builder Frank Kessler was building and selling five-room, 780 sq. ft. houses (pictured opposite) for $2,450.



Today's defense housing includes trailer camps . . .



. . . and unimaginative houses little better than those of World War II

see the town overbuilt, especially in rental housing. Said one: "We haven't forgotten those 500 empty apartments last summer. The aircraft factories told us they were hiring several thousand new workers. We went ahead and built. There was a slip-up somewhere and the new workers weren't taken on for months. Meanwhile we were stuck with a lot of apartments."

Employment ads without new housing

Are Wichita's housing planners overestimating the new defense worker's willingness to double-up? In the last war, there was no trouble: patriotism and the shortage of any jobs except war work made thousands of workers double up without complaint. But the present situation is different. "Peacetime" industry is still booming and it is harder to persuade skilled people to move to a defense area either by flag waving or even by offering better wages.

Until two months ago, the aircraft factories could tell out-of-town workers that housing was available in Wichita. But now the recruiting teams which have gone as far away as Boston and New Orleans for machinists and other skilled workers can make no guarantees. What effect will this have on Boeing's recruiting?

Photo (below) LIFE: Gordon Coster; (others) Don Forbes Studio





Prices going up

Apartments in older houses are available in Wichita today on a scarcity basis. They are relatively high-priced. (Wichita dropped rent control in 1947.) A single room costs from $30 to $60 a month. A one-bedroom old-house apartment runs from $55 to $90 not counting utilities. There are virtually no two-bedroom apartments available: less than 10% of the units in rental projects built last year in the town had two or more bedrooms. ("Sure, they want two bedrooms," explained one builder, "but they want to pay one-bedroom prices.") If an aircraft worker has a chance to rent a new 608 apartment, it will cost him $60 without utilities. New houses are being built to sell for $7,500 and up. Used houses are still easy to buy, but at rising prices. Wichita builders have erected 5,000 houses since 1940—an extraordinary 25% increase in the total housing supply within five years.

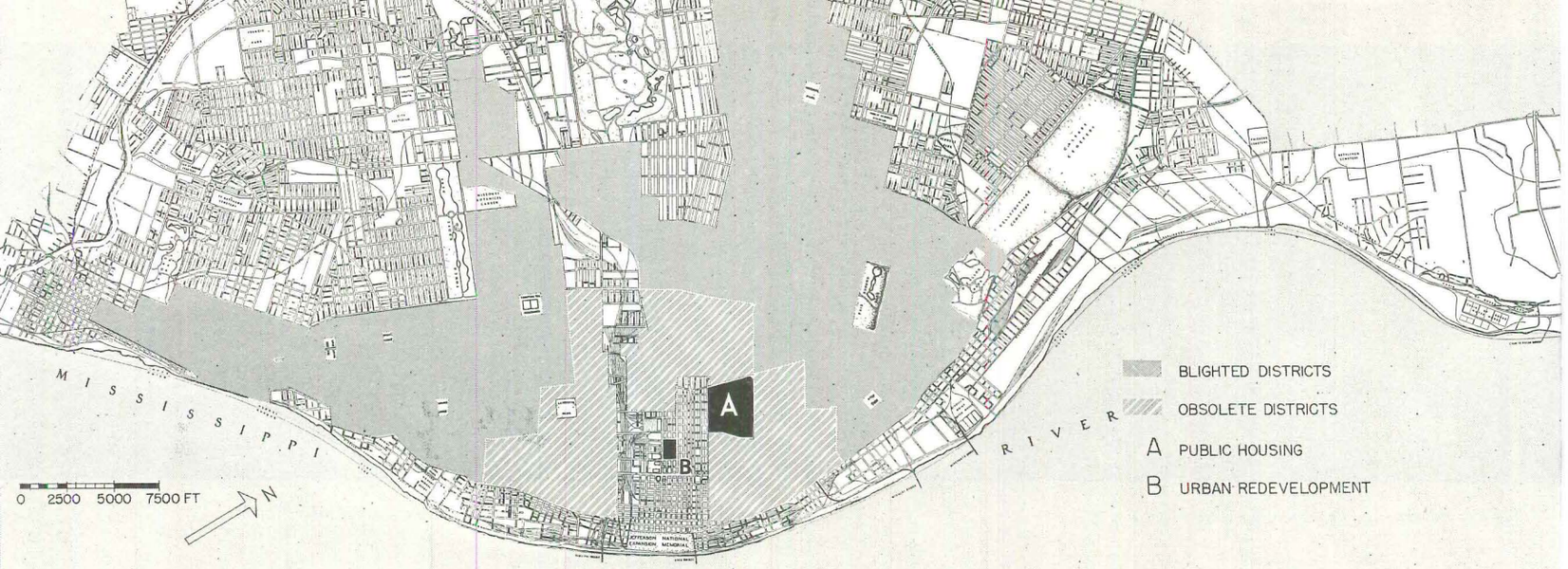


Builder Garvey: "If they leave us alone . . ."

Since the aircraft factories are recruiting only skilled workers from out of town, the newcomers should be able to afford these prices. The skilled categories at Boeing pay upwards from $1.35 an hour. Currently, a good part of the plant is working a 48 hour week. Thus a skilled mechanic is averaging $70 a week. For a great many, it is nearer $100. Unskilled workers (who come to town for a job without being recruited) start out at Boeing at $1.07, are usually making more than $1.20 within a few months.

Time will tell

Meanwhile, Wichita's builders are going ahead on the assumption that doubling up will solve most of the town's housing problems. If not, inadequate housing may soon give the aircraft factories a high turnover. In that case, the pressure for government housing will be strong. A short time will tell whether the Wichita builders are adequately meeting the new housing demand on a private-enterprise basis or are in need of government assistance.



Slum Surgery in St. Louis





Photos: Paul Berg, St. Louis Post-Dispatch PICTURES

When Huckleberry Finn drifted down the Mississippi on a raft with the runaway slave, Jim, in the early 1800's, and slipped past St. Louis in the dark of the fifth night, he thought, ". . . it was like the whole world lit up. In St. Petersburg they used to say there was twenty or thirty thousand people in St. Louis, but I never believed it till I see that wonderful spread of lights at two o'clock that still night. There warn't a sound there; everybody was asleep."

St. Louis got a lot bigger. It got to be the third largest American city in 1870. But it wasn't until it fell pretty far down (eighth in 1950) that everybody woke up and saw the rot.

Last month St. Louis was getting ready to cut two big sections out of the collar of slums which is threatening to strangle its downtown business section. Financially and architecturally, the separate operations—one mostly private, the other entirely public—might well set a new rescue pattern for other tight-collared U. S. cities who are watching their substance disappear to the comfortable suburbs:

Private project . . . One slum clearance project is planned under the Urban Redevelopment section of the Public Housing Act of 1949, which helps buy slum sites for clearance and redevelopment by private investors — but the initial private capital in St. Louis *will not be insurance company money.* Instead, a committee of 20 St. Louis businessmen has raised equity ($2 million) to form their own local Urban Redevelopment Corp. and start building a set of tall slabs housing 1,500 middle income families in the middle of town.

Public project . . . Construction will start soon on a $58 million low rent project to cover 96 acres of the city's worst slums. Replacing ramshackle old houses jammed with people—and rats—will be 11-story apartment houses which, even unbuilt, have already begun to change the public housing pattern in other cities. Skip-stop elevator service will be combined with open galleries every third floor to build vertical neighborhoods for poor people in a city which up to now has lived 90% in single houses. Compared with the unimaginative public housing prototype the architects were given to match, the new plan saves not only people, but money. And as instructive as the buildings is the site design: a city-purchased park will be stretched out to wind through the area like a river.

This is a dead house. *Old St. Louis residences like this one were built in the 1800's and have shells of enduring brick, because good clay was so readily available that "it was easier to dig yourself some and make some brick molds than to chop trees for lumber." But 25 people, including 6 children, have to live in the desiccated interior of this shell—it is in one of the old sections which give St. Louis the dubious distinction of having the most crowded houses of the twelve major U. S. cities. Another distinction: of the 10 largest cities, St. Louis has the highest percentage of dwelling units still using outside toilets (13.2% at last count). And these slums are within screaming distance of the main business and shopping district of downtown St. Louis.*

The Mayor is a Real Estate Man

Joe Darst can ride around the St. Louis area of a Sunday afternoon and go through two subdivisions which bear his name, Darstdale and Darstmore—the products of his and his father's real estate firm. If he wants to dig deeper into the past he can drop into old St. Louis Cathedral, where he will find hung on the wall a document dated 1831 bearing the signatures of the Bishop of St. Louis and his great grandfather, John Darst, in which Darst contracted to produce woodwork for the Cathedral.

The Darst family has been part of St. Louis a long time, which is probably one reason why the mayor wants to preserve the city.

St. Louis sits beside a wide part of the Mississippi in the center of a web of railroad tracks, and has grown back along the railroad lines, not along the river. City limits were set in 1878, and this basically caused the present sad financial position of the city proper. More than one-third is now blighted area—a tax liability; another 8% of the city's area, five square miles, comprises slums among the worst in the world, inhabited principally by Negroes, who form about a sixth of the population.



"We must rebuild, open up and clean up the hearts of our cities. . . . The fact that slums were created with all of their intrinsic evils was everybody's fault. Now it is everybody's responsibility to repair the damage."

The city showed a net loss in population in 1940, but even then the suburbs were booming. St. Louis County —outside the city limits—now numbers over 300,000 to the city's 800,000-plus; back in 1890 the city was 12.4 times as populous as the county, but today everybody wants to move out. In the last five years, only 5,175 dwellings have been built in St. Louis proper. In the suburbs, 27,000 have been built.

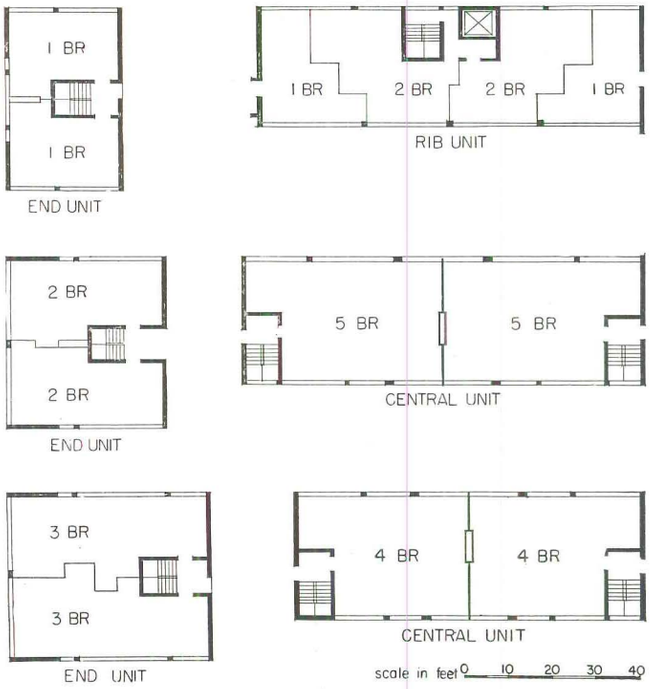
Social planners in St. Louis think the population should be allowed to disperse, that even public housing projects should be built outside the city; but then what happens to the city?

Darst is out to reclaim St. Louis with all tools available, and the readiest seems to be the Public Housing Act of 1949. He has labored in other directions, as with Nelson Rockefeller's IBEC Corporation, which was interested in building 3,000 Negro housing units in St. Louis; but his biggest present means for revitalizing slums—and his city—is the 12,000 unit Public Housing reservation allocated St. Louis. Almost all segments of political opinion are strong behind him in his housing program, including St. Louis Big Money, which has a large stake in this big old city.

In a 13-week editorial campaign, St. Louis' great newspaper, the *Post-Dispatch*, asked an ominous question:

ST. LOUIS POST-DISPATCH
PROGRESS OR DECAY ?
ST. LOUIS MUST CHOOSE

The mayor and most of the citizens think there is a hopeful answer.

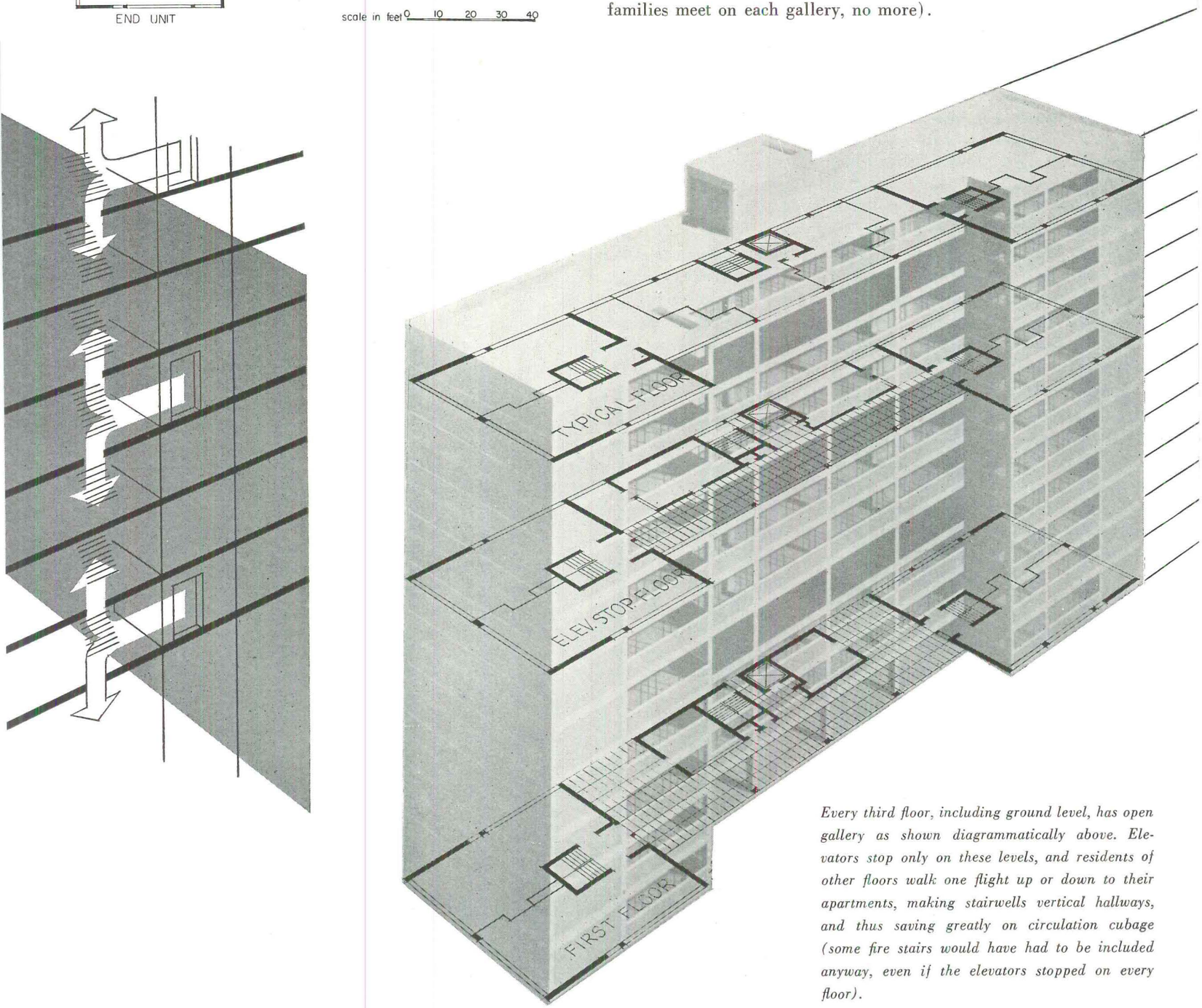


A new apartment type, patent pending

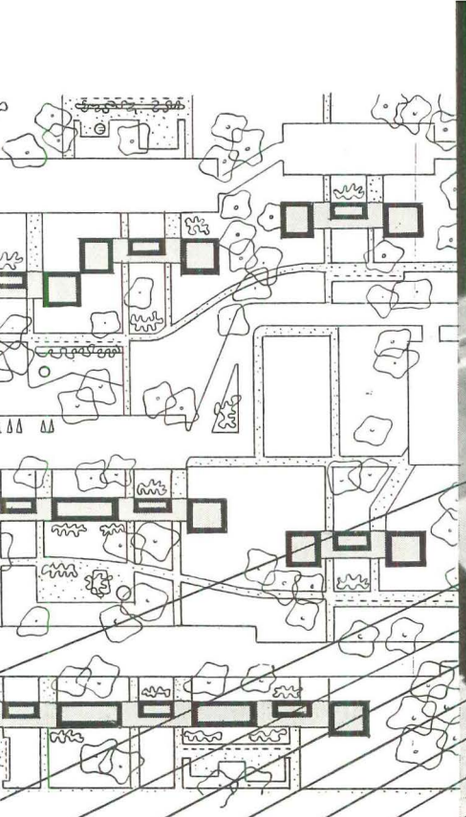
The elevators stop every three floors, and dwellers on the intervening levels walk up or down to their apartments. This money-saving feature is not new; but combining it with an open gallery on elevator-stop floors in these buildings in order to eliminate hallways and create "neighborhoods" at different floor levels has already been the subject of so much interest and emulation by other cities' Public Housing Authorities, that the architects' lawyer has decided it is patentable, and has filed.

Although there will be a minimum of 200′ between buildings, this project will double the present density of the site, which is now occupied by jammed, rat-ridden old houses, interspaced by junk-yards—an atmosphere of debris and despair.

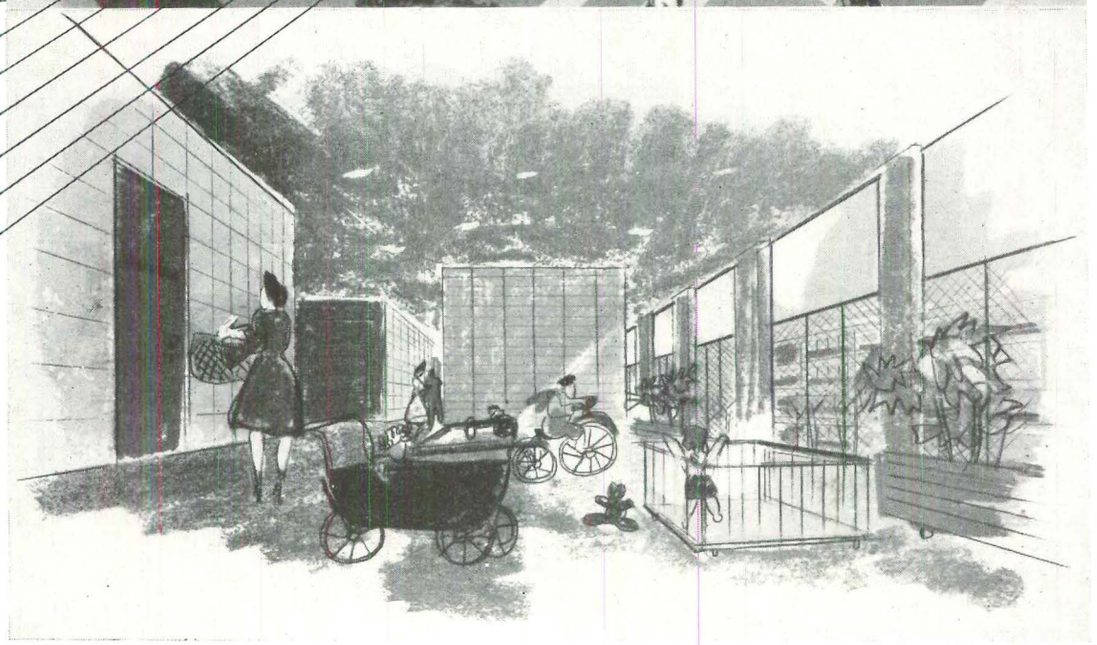
A total of 26 apartment houses is planned for the 96 acre site, and each will be made up of the elements shown separated (left). Each complete building consists of a slab fattened at the ends (right). There is no through horizontal circulation in any but the shortest building; instead, when a building is to be increased, another stack of apartments is added to the length, serviced by its own elevators and stairways. This way, neighborhoods are added, not enlarged (20 families meet on each gallery, no more).



Every third floor, including ground level, has open gallery as shown diagrammatically above. Elevators stop only on these levels, and residents of other floors walk one flight up or down to their apartments, making stairwells vertical hallways, and thus saving greatly on circulation cubage (some fire stairs would have had to be included anyway, even if the elevators stopped on every floor).







The gallery

The 20 families will use the gallery:

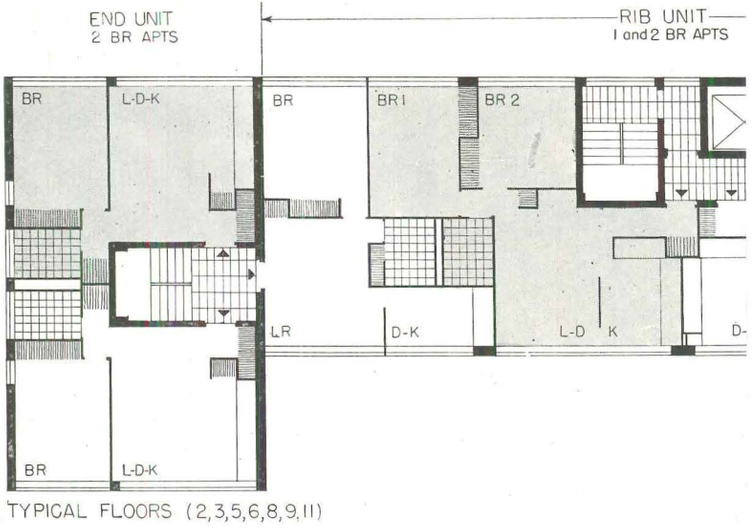
1. As a close, safe playground for small children while mothers are doing housework, or laundry. Young children need use no elevators to get to this play area. For safety, opening will be fenced completely with a steel weave.
2. As an open air hallway.
3. As a porch in spring, autumn and summer. Summer breezes can blow through the gallery, but winter winds will be blocked by movable shutters. Galleries face south and are assured summer shade and winter sun by the ratio of gallery depth to height.
4. As a laundry. A concessionaire will put a coin operated automatic washer and dryer on each gallery (there is space for two if necessary). Facilities also are provided for tenants who wish to wash by hand or by their own washing machines, and there are two drying yards on each gallery. A decision from Washington allowed the architects to substitute this arrangement for kitchen laundry tubs.
5. As storage for such items as bicycles, washing machines, and tools. Each family is given a bin for such items in the central area just off the elevator (instead of in the far away basement—the bane of many an apartment dweller's existence).

Galleries are 11 ft. deep by 85 ft. long and will all be oriented south. These areas are to be used as play and lounge areas for wheel toys, perambulators, play pens, and occasionally for outdoor dining. Critics of multi-story public housing projects always object to distance of play areas for small children from mothers' supervision, also to fact that children must use elevators. These objections are avoided here; mother can be doing laundry within sight and hearing of child playing in sun. And all this is not too far away from whatever may be cooking on the apartment stove.

ARTHUR A. BLUMEYER, Chairman, St. Louis Housing Authority
HELLMUTH, YAMASAKI & LEINWEBER, Architects
HARLAND BARTHOLOMEW & ASSOCIATES, Landscape Architects
WILLIAM C. E. BECKER, Structural Engineer
JOHN D. FALVEY, Electrical & Mechanical Engineer
HORNER & SHIFRIN, Utility Engineers

Model by Mitchell
Model photos by Hedrich-Blessing Studio





TYPICAL FLOORS (2,3,5,6,8,9,11)

Away from the cross plan in apartments?

The efficiency target set for the architects of this project was the cross plan in use in New York City Public Housing. But they planned harder and tighter in their slabs and have designed a type which their estimators say will undersell the cross by 16%—without cutting room sizes.

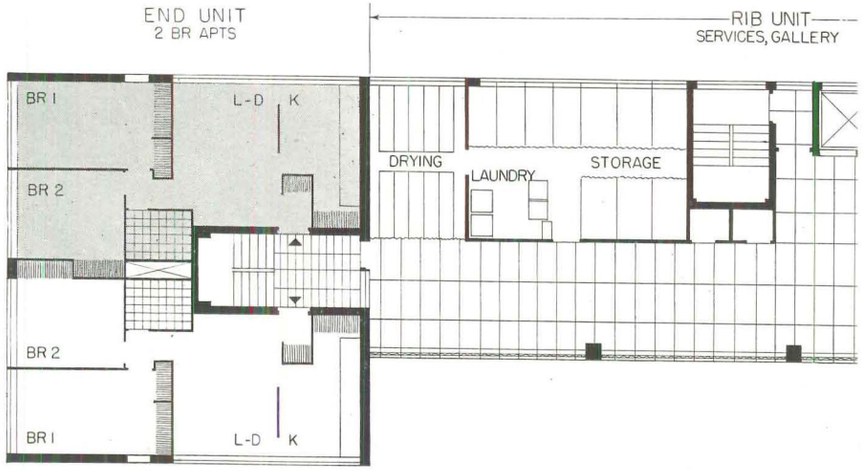
The comparison is based on a project of nine cross plan apartment buildings 14 stories high against a project of 14 St. Louis slab type buildings 11 stories high, each containing the same total and types of rooms. Comparative cost in the St. Louis area of the cross type would be $6,412,940; of the St. Louis type, $5,419,400, or about $1,000 less per dwelling unit.*

The biggest economies of the slab over the standard cross are in circulation area and elevator halls, and in elimination of the basement. The cross plan project has almost 65,000 sq. ft. of service area (laundry, storage, etc.) in the basement. The St. Louis plan moves the services upstairs, where they are handier (see page 131), gives them 6,000 sq. ft. more space and leaves out the basement. Moreover, the St. Louis type skip-stop elevatoring cuts so much square footage in elevator halls and circulation upstairs that the combined services and circulation area totals 99,000 sq. ft. less. That means that each apartment, St. Louis type, requires about 92 sq. ft. less building to house and service it, a tremendous saving—estimated at about 12% of construction cost.

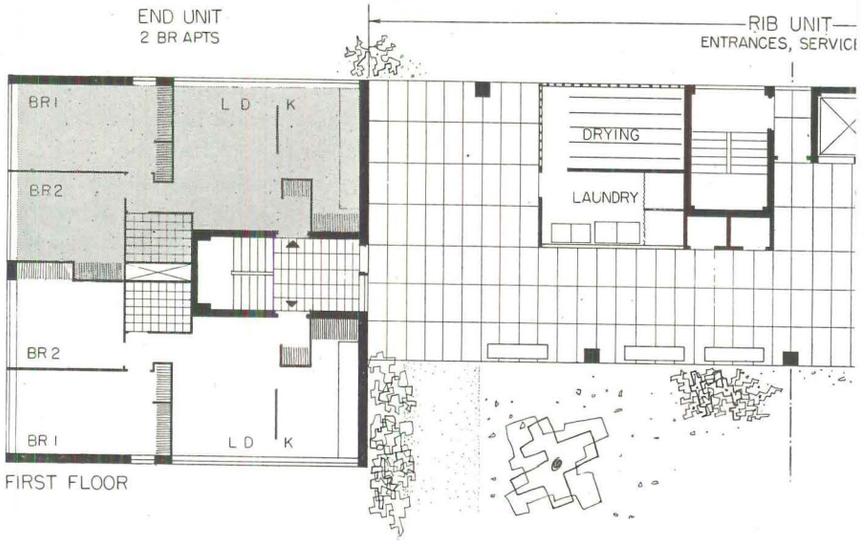
The other 4% savings are: *elevators*—the cross type project requires 18 elevators and stops them at every floor, necessitating 252 door openings; the St. Louis type uses only 14 elevators, skip-stop, for a total of 56 door openings; *structure*—it is obviously easier to frame the rectangle than complicated X's; *materials*—brick will be saved by leaving the concrete frame logically exposed.

Floor areas in the apartments are well above the minima set by Washington. And the extra gallery space, better ventilation and orientation, greater privacy, better play area, and larger number of fire stairs gained by giving up elevator service to all floors make this apartment type look like a good bargain.

The 4,700 units in the whole project will vary in size: 24%, one bedroom; 42%, two bedrooms; 29% three bedrooms; and 5%, four and five bedrooms. Rents, pegged to family incomes under $3,100, will be $16 to $47 per month. The entire project will cost $58,758,000 including land, or $12,500 per unit.

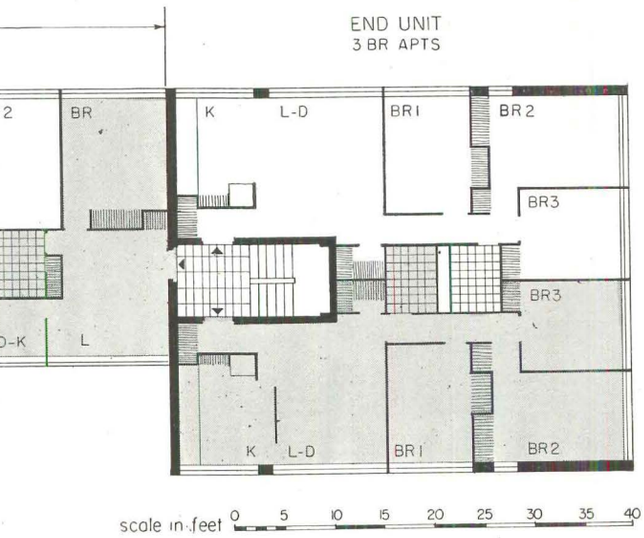


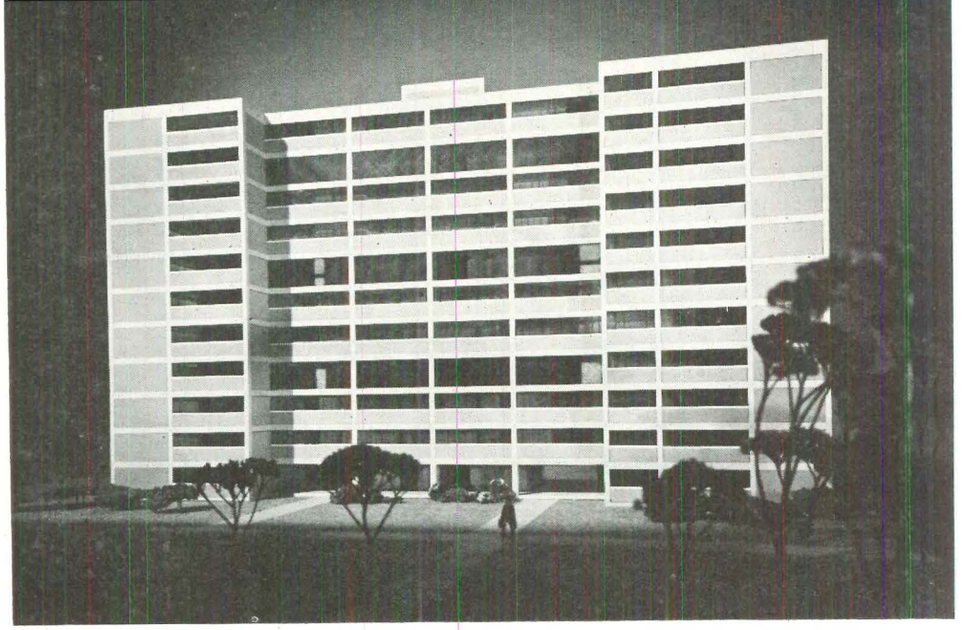
ELEVATOR STOP FLOORS (4,7,10)



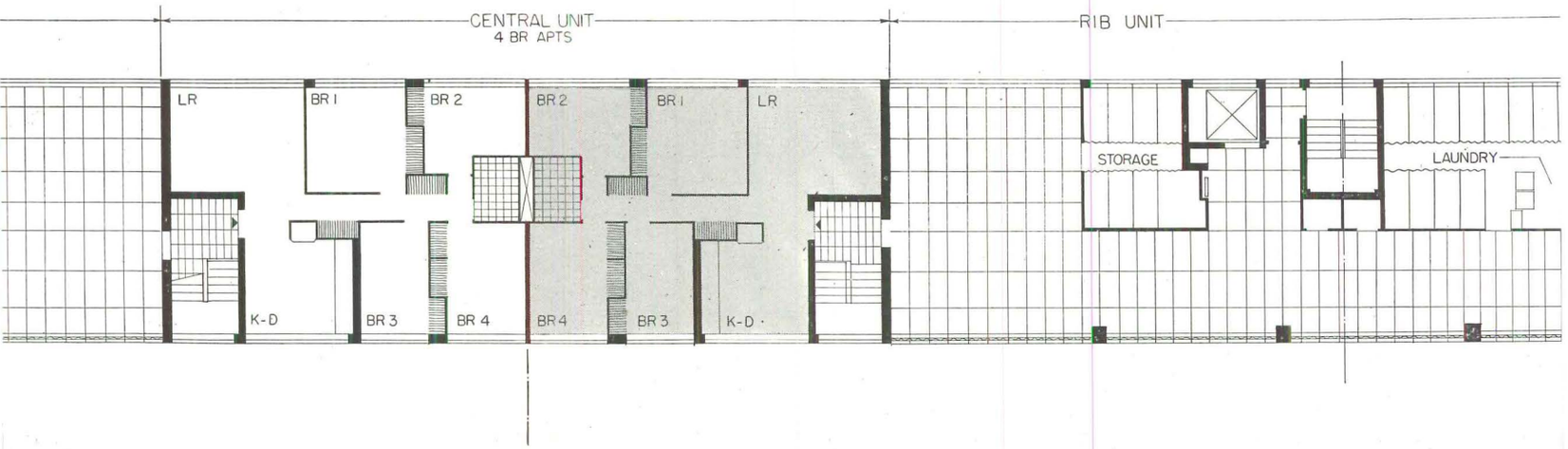
FIRST FLOOR

* Only following variable items were estimated: excavation, concrete, cement finish, waterproofing, masonry, plastering, sash, glass, roofings and insulation, miscellaneous iron, sheet metal, doors and frames, and elevators.

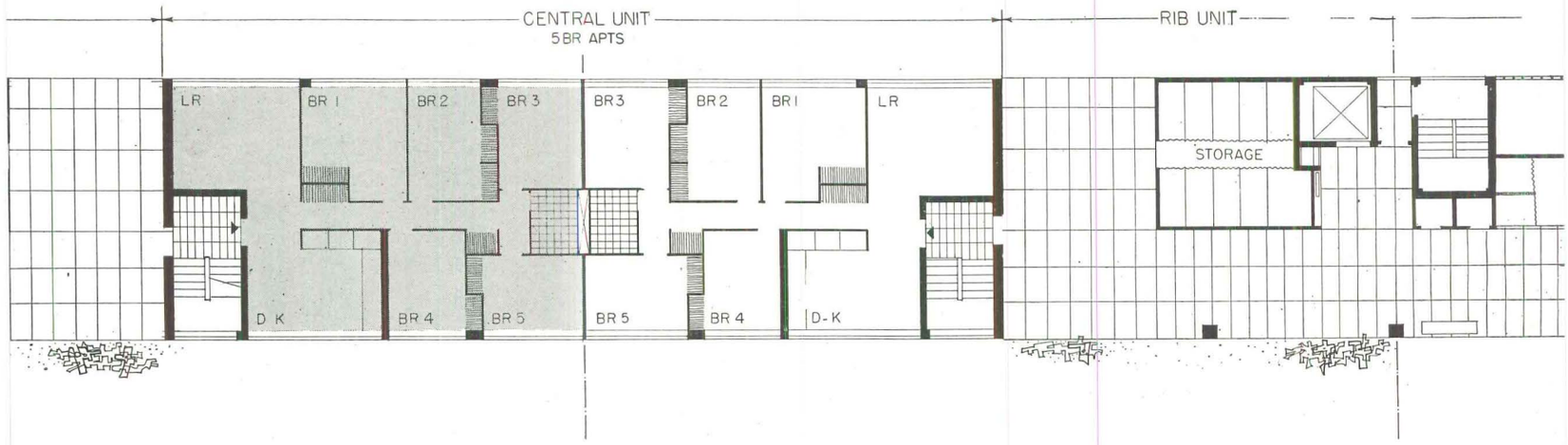




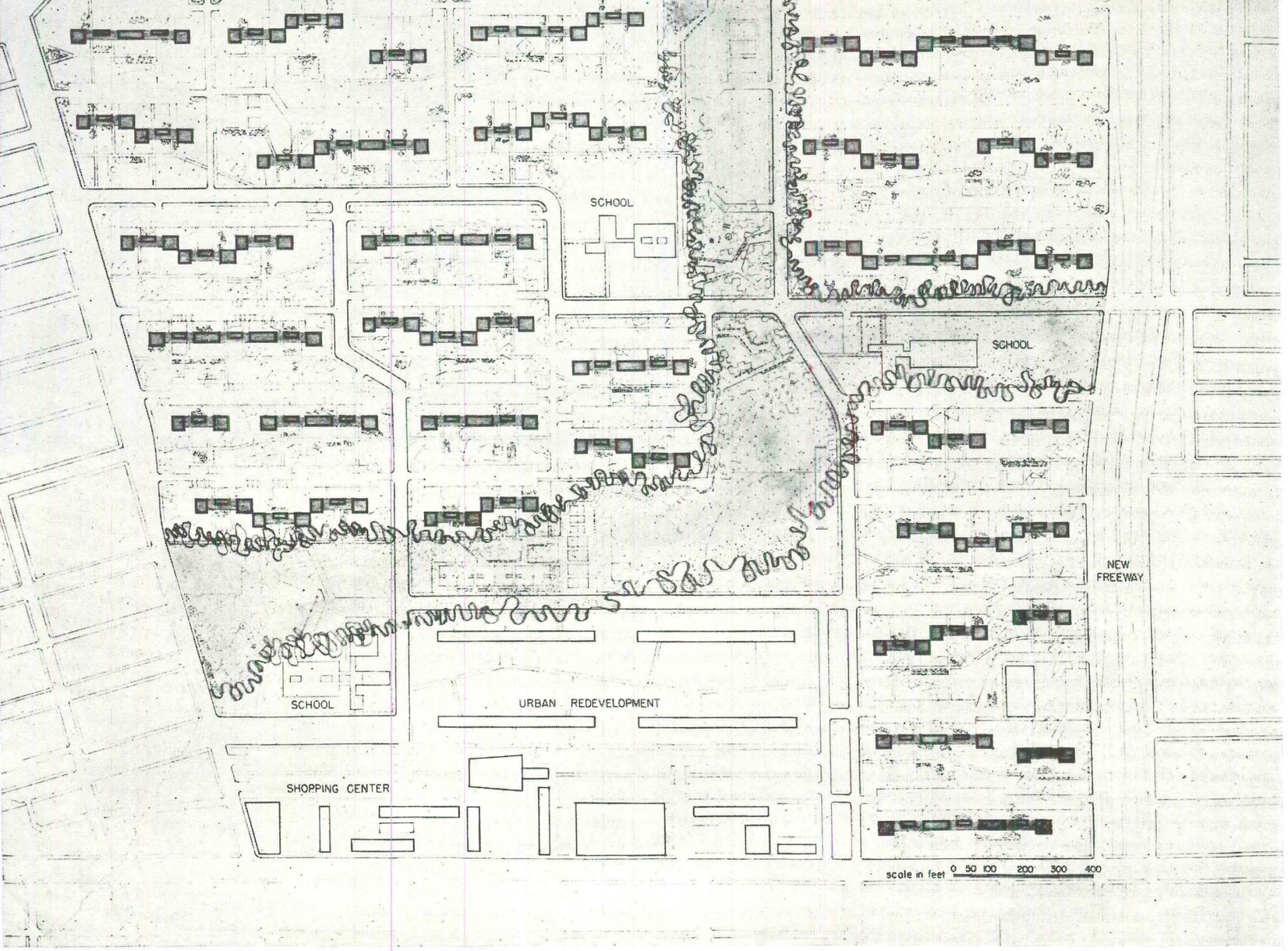
ree variations of the plan used are shown on this page, including amples of each apartment layout, and floor plans of each typical floor el. (First floor, gallery floor, solid apartment floor.) Basic building bove) combines two end units with a rib unit containing elevators. In or shown of this apartment, residents walk one flight up or down to llery floor to get elevator. Note minimum space alloted to hallways.



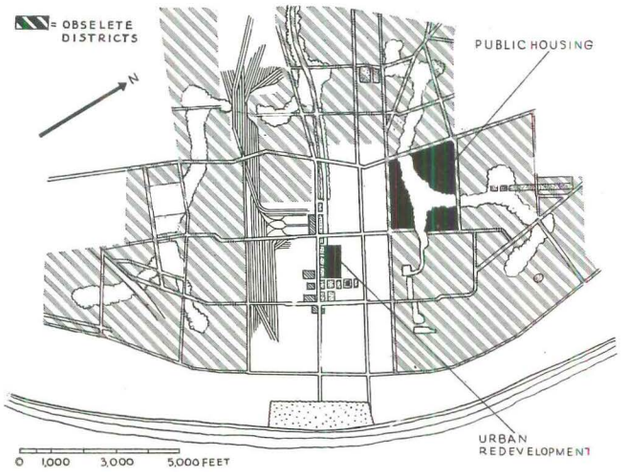
gger building lengthens the slab between end units by including rib its and a central section of larger apartments. After model was com- ted, architects changed plans to include a bedroom window shown only plan in order to insure through ventilation. Plan runs off page to right, would include rest of rib unit plus another end unit, terminating slab.



aller laundries and drying areas are adequate on ground floors be- se they are used by ⅓ fewer families. This variation of basic plan embles one above, but central section is somewhat longer to include ger apartments. As above, rib unit running off page to right would t into end unit, terminating slab.


SCHOOL
SCHOOL
NEW
FREEWAY
SCHOOL
URBAN REDEVELOPMENT
SHOPPING CENTER
scale in feet 0 50 100 200 300 400



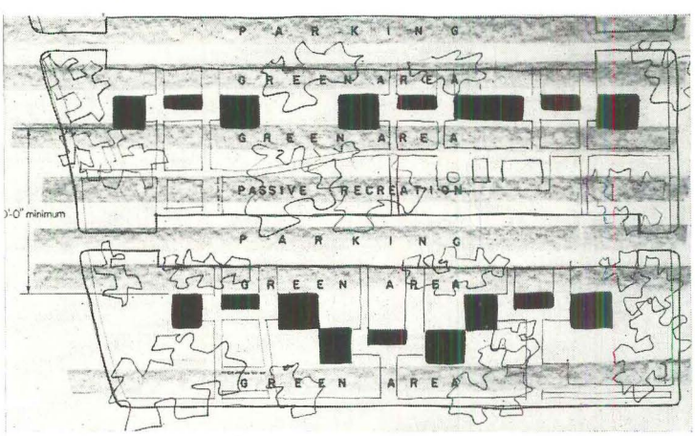


River park plan extended to city

A river of trees

nother refreshing part of the project is the method of spreading ıe park land, which the city will buy as part of the project. Inead of lumping it in one area, designer Yamasaki is using it as a ·iver" of open space winding through the project. This idea was rojected to the entire St. Louis area in a proposal by City Planner arland Bartholomew, when he suggested a larger river system parks in the blighted area which surrounds the business section see drawing). A long narrow park is more useful than a square ark, say the planners.

Land selected for this public housing is the cheapest such par·l in St. Louis ($1.20 per sq. ft.), but by the time this project completed will probably have grown to be the best. An earlier te plan which packed garden apartments all over the area was rgotten in favor of a plan which leaves a minimum of 200 ft. etween buildings. When they first discussed this, the designers ippened to be in their Detroit branch office, which looks out on)0 ft. wide Washington Boulevard. To estimate the proper dimenoning of the space between buildings in the housing project into ·een area, parking area, and recreation area (see drawing) they



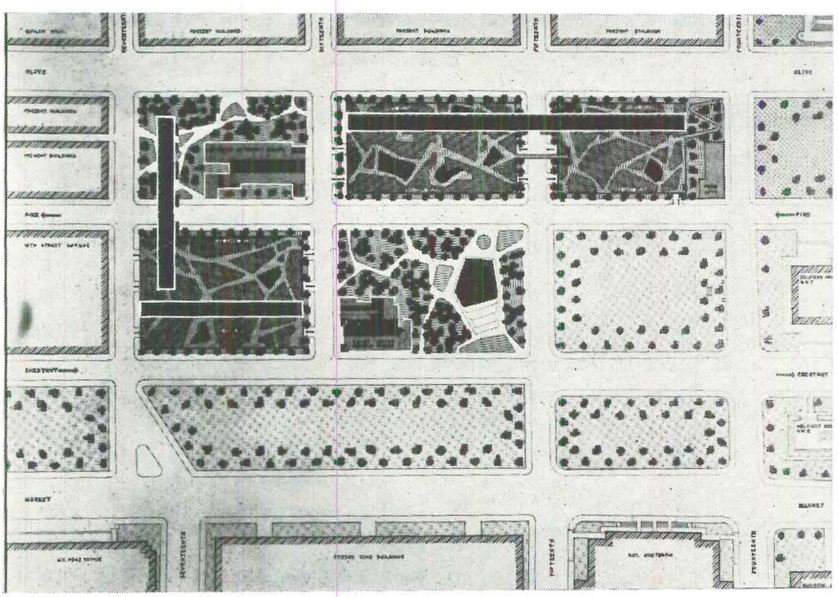
ent downstairs with a tape measure, and spent a morning markıg off distances, an unusually practical maneuver which lost them couple of tape measures to Detroit traffic, but gave them a firm lea of the realities of their space.

One part of this big site has been reserved for a future Urban edevelopment project, to be privately financed and operated. his would be a big help in the relocation problem for families ow living on this site, some of whom will not be eligible for pubc housing. The relocation problem will also be minimized by leapfrog" construction of the public housing part of the area: y building one section at a time, and starting in the area of presıt lowest density, the Public Housing Authority hopes to be able move displaced families to new homes within the project as uilding goes ahead. The project will be ⅔ Negro, ⅓ White.

PRIVATE HOUSING

The second half of St. Louis' attack on slums —backed by local businessmen

Before they are finished, a committee of 20 St. Louis businessmen may put up another $50 million in slum clearance projects for middle income families. (For financial mechanics of plan see next page.) Today, the project exists only as architects' sketches, but the committee has amassed two million dollars in pledges from downtown St. Louis companies to start with, and the sketches by



Architects Harris Armstrong, and Hellmuth, Yamasaki & Leinweber show the type of improvement the 20 have in mind: three tall sinewy slabs comprising 1,200 apartment units in a park near the Union Station, replacing 5 rundown blocks of slums and flophouses which are now a scar and financial load on the city.

The committee, formed in spring of 1950 to raise capital and run the project, was Mayor Darst's idea. Members, all conservative business leaders, include Augustus Busch of Anheuser-Busch, Morton May of the May Company, Clifford W. Gaylord of the Gaylord Container Corporation, Sidney Baer of Stix Baer and Fuller, and Frank Mayfield of Scruggs, Vandervort and Barney. Executive vice president and general counsel for the committee is the Republican mayor who preceded Darst in office, lawyer Aloys P. Kaufman.

This would not be an investment purely for "return" on money, though it was surely not a donation, Kaufman told St. Louis businessmen; there would, however, be a gigantic return on investors' money if ravelling business values in the downtown district of St. Louis were caught up. A local newspaperman said, "The committee wasn't looking for money from widows and orphans; they had the kind of arithmetic which could appeal to the big companies who have big investments in the downtown." Famous Barr Department Store subscribed $300,000. Heffern-Neuhoff Jewelry Store put in $500. The *Post-Dispatch* invested $250,000. The complete roster of backers reads like a bluebook of downtown St. Louis businesses.

A department store executive explained the six figures of his

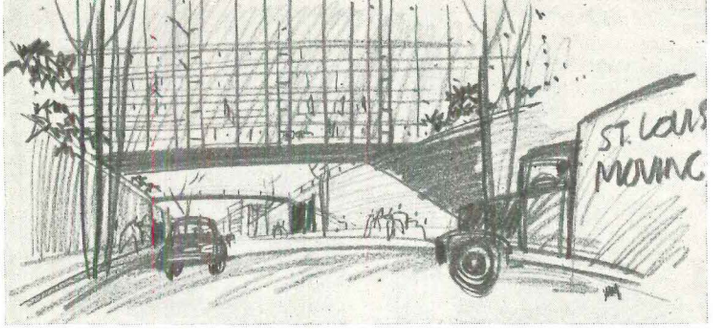
company's big pledge: "Sure we can follow the population to the suburbs. We're doing that, with branch stores. But for merchandising it is much better if you can have one big base that also pays its way. In a slum we don't do that. And supposing the whole city did turn itself inside out and disappear to the suburbs—once that had happened completely, the implications for the life of the city as a whole, including those suburbs, might be something to worry about. You don't go on walking without a heart. We've got to save that, and if we start soon enough together with public housing, we can."

According to Delbert Wenzlick, whose company operates the biggest string of apartments in St. Louis now, the right kind of apartments in that district can be rented for upward of $2 per sq. ft. per year. "The big shortage in this town is 'efficiencies' —small apartments. We have a hundred applications for one of ours." Another factor in sizing apartments: when guaranteeing loans on projects, FHA figures the maximum mortgage on the basis of the number of apartments as well as the number of rooms. "Efficiencies" are what the committee of 20 businessmen plans to build.

Money mechanics:

The committee of 20's $2 million, raised by selling stock and debentures, will all go into the first part of the project—with this equity they should be able to raise $8 million more through an FHA insured mortgage from a private investor (several Life Insurance Companies are interested).

There will also be help in three stages from the Housing & Home Finance Agency: first, a $55,000 grant for planning, to St. Louis' new Land Clearance Commission, and later a short term loan for slum acquisition and clearance. Finally, when the land has been cleared and resold to the Urban Redevelopment Corporation at a loss to make it a realistic investment, the HHFA will pay ⅔ of the loss, out of a $5,196,000 allocation to the St. Louis area.

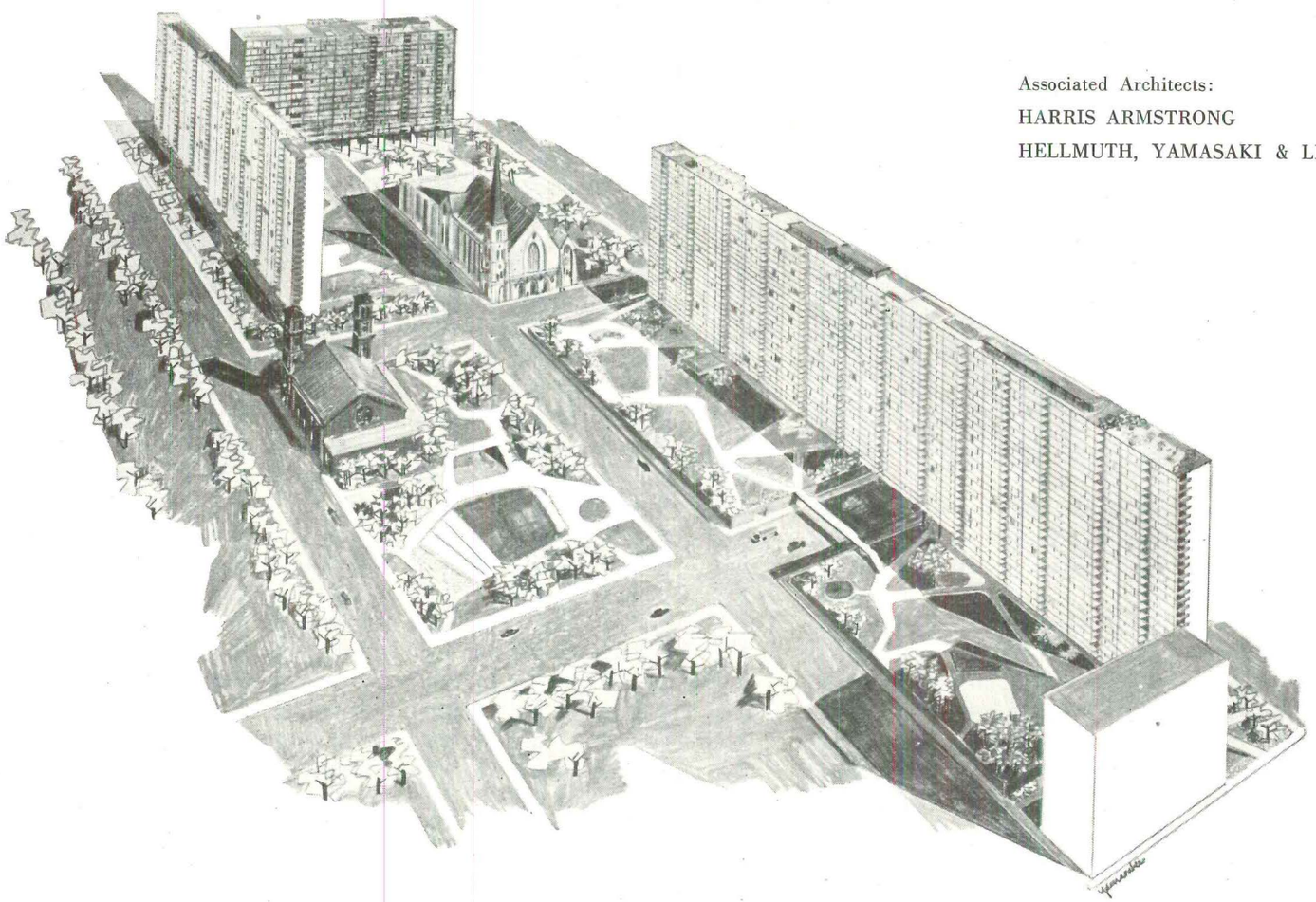


Principal streets running through this apartment group would be depressed to pass under great slabs of apartments (above). Garages under two of the buildings extend the full block; their roofs are used as garden terraces 1½ stories above the street. Two existing churches in the area are retained (perspective below), adding scale to the sculptural effect.

The other 1/3 of the loss on the real estate transaction will be borne by the city, but can be contributed in the form of streets, utilities, and other improvements like new schools.

Another incentive to build is offered by the state of Missouri, whose own redevelopment act permits lower local taxes on such enterprises in return for a guarantee of limited profits to the investor. For the first ten years, only the present tax on the land will be paid by the Redevelopment Corporation; for the next 15 years, only 50% of the assessed value of the land plus the new buildings. The profit limitation exacted by Missouri is 8%.

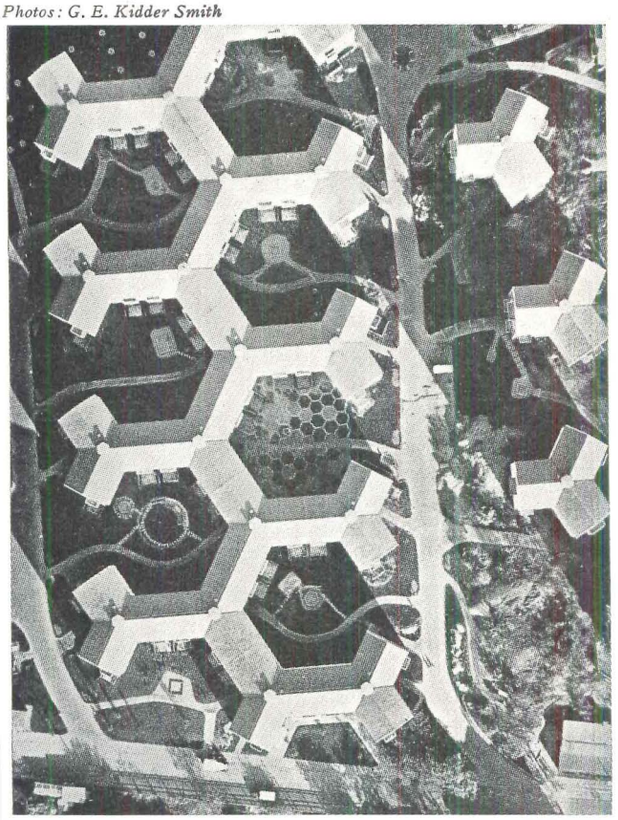
The committee of 20's fund can be continued after completion of the first apartments if they then sell their $2 million equity to another private investor, and use that cash to go on and clear more slum area in the same financial pattern with the aid of more federal money for land acquisition.



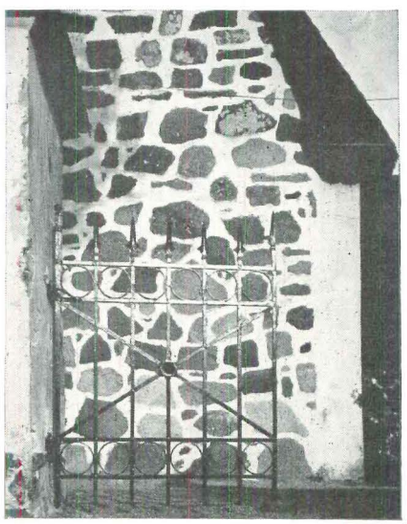
Associated Architects:
HARRIS ARMSTRONG
HELLMUTH, YAMASAKI & LEINWEBER



Photos: G. E. Kidder Smith

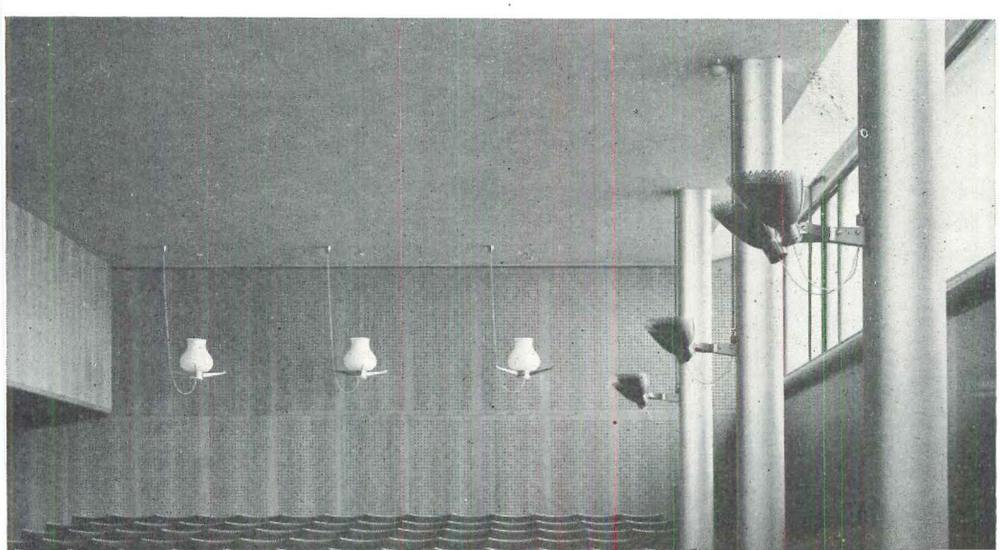


Gröndal Apartments, Stockholm (above and upper right) Backstrom & Reinius, Architects, are built around sun courts protecting them from blustery winds on site overlooking harbor. Each court is painted different color to create "neighborhood."



Häverö Church, built in Uppland about 1300, "Shows the simple forms of Central Sweden impressively realized in local stone," part of the country's continued architectural heritage. →

Auditorium in Linköping museum, Ahrbom & Zimdahl, Architects, is typically calm handsome Swedish interior. Wall finishes are pierced mahogany and walnut.



SWEDEN BUILDS

By G. E. Kidder Smith, AIA; With Land Policy Chapter by Sven Markelius; Published by Albert Bonnier, New York and Stockholm, in cooperation with the Swedish Institute, Stockholm; 280 pp.; 8½ x 11 in.; Illus.; Price $8.50.

England's *Architectural Review* called it the "New Empiricism"; others called it the International Style in bedroom slippers. They were talking about Sweden's architecture today.

Kidder Smith's new book on this architecture describes at length what has happened to the modern building esthetic in a country whose people have been living with it almost exclusively for a generation now: "Swedish architecture . . . has concentrated on producing the highest general level of architecture in the world, and one intimately tied to progressive planning and social betterment . . . The one adjective appropriate to describe Swedish architecture — if one must be employed — is 'civilized.' Specific buildings may in addition be (as they generally are) clean, simple, direct, elegant, democratic, sensitive, harmonious, charming, gracious, self-effacing, well built, beautifully detailed, colorful, and even playful, but *civilized* is the generic term for most modern work. In addition, an outstanding characteristic of most new Swedish building is its friendly, sympathetic scale. There is no bombast and authoritarianism, no fascist leaning, never a self-conscious straining for effect. Architecture is considered as an end for humans, not for itself. Swedish architecture has a simplicity suggesting inevitability. Its quality is high; its standards of finish and craftsmanship are superb; its detailing is imaginative. Its overall impression lies not so much in individual greatness as in collective excellence."

The results in structures are pleasant but not stirring. Planning on a broad scale is more important than buildings, and claims the attention of the best architects—"Esthetics can be in time a style and a dated one, but the sociological approach to better housing,

(Continued on page 252)

HOTEL MADE FOR THE TROPICS

LOCATION: Panama City, R. de P.
EDWARD D. STONE, Architect
KARL J. HOLZINGER, Associate
(Stanley Reese, Alexander Knowlton and J. Graham Stewart, Project Staff)
MENDEZ & SANDER, Associated Architects
ARANGO & LYONS (Panama) and PAUL SMITH (Miami), Contractors
THOMAS CHURCH, Landscape Architect
GUY B. PANERO, Mechanical Engineer
FRED N. SEVERUD, Structural Engineer
FLORENCE B. HAYWARD, Decorator

The hill on which El Panama *was built overlooks the Pacif entrance of the Canal to the south. A dozen miles to the north Tocumen Airport, principal airfield for the Republic—the plac where passengers and crews change planes on flights betwee North and South America. A couple of miles to the west is Panam City. At night, the lighted honeycomb structure is an elevated lanc mark, strikingly visible for miles around.*



Honeycombed *El Panama* is air-conditioned by the trade winds

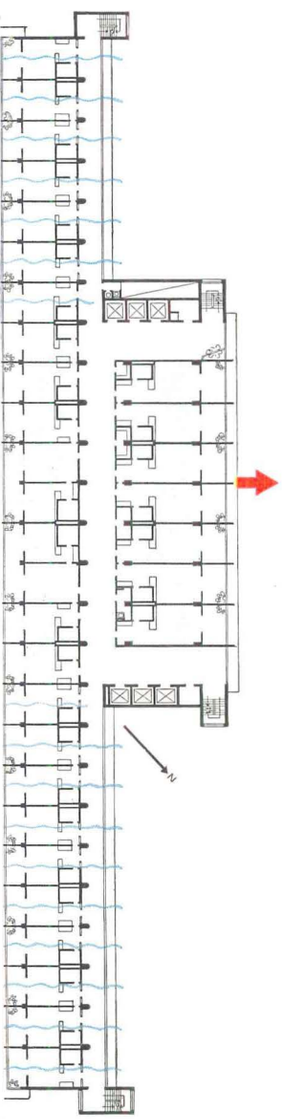
"I told Frank Lloyd Wright that we had designed a hotel without windows, without doors and without corridors," says Architect Ed Stone. "But that was an exaggeration, of course." It was a very slight one indeed: For most of its 450 ft. length this tall, white honeycomb on the edge of Panama Bay is wide open to the cooling ocean breezes; and more than half of the hotel's 271 rooms are really breezeways raised high up into the tropical sky where the trade winds can sweep right through them.

This openness to the trade winds is more than a bit of climatological trickery; it is characteristic of the architects' whole approach to the design of *El Panama*. Where others would take hotel plans good for New York (or London or Paris) and impose them upon the tropics (e.g. the *National* in Havana), Stone and his associates decided to *use* the tropical climate rather than fight it and to let the tropics air-condition themselves. Where others had come with preconceived notions, the architects of *El Panama* approached their problem with an open mind, came up with a whole stack of fresh ideas that have already revolutionized hotel planning in many parts of the world. For the most interesting fact about *El Panama* is that it was an ancestor before it was even born: Designed in 1946 (and delayed by temporary money troubles), *El Panama* anticipated many new developments in hotel design by half a decade, pioneered the breezeway-room (since used in the *Virgin Isle* on St. Thomas) and the lobby-less ground floor—since employed with magnificent effect in San Juan's *Caribe Hilton* and proposed for Maracaibo's *Del Lago* (THE MAGAZINE OF BUILDING, Mar. & June '50, resp.)

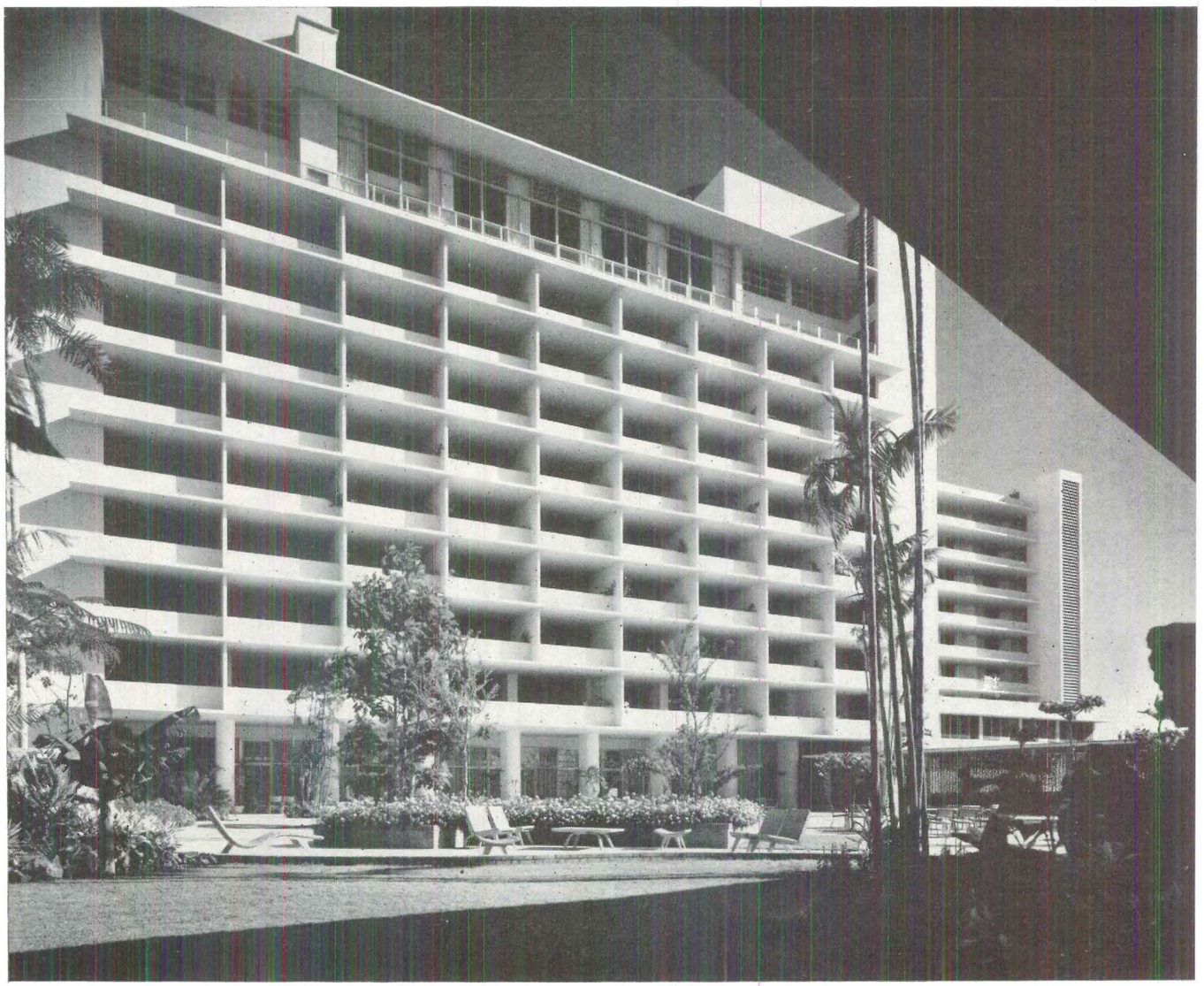
The building that has caused all this commotion in hotel circles is, incidentally, a distinguished piece of architecture (though a good deal more distinguished when seen from the south than from the north). Hotel specialists certainly will take notice of *El Panama's* stunning south facade (photo opposite); but they are even more impressed by the open and effortless flow of space in *El Panama's* plans. That openness is striking in the airy hotel rooms that act like a hundred little wind tunnels for the northwest breezes from the Atlantic. And it is just as striking in the lobby-less ground floor—a large and colorful indoor-outdoor space made up of restaurants, bars, pools, terraces and dance floors under tropical palms.

Hotel without lobby

"All that big lobbies are good for," one hotel planner said recently, "is to attract old ladies who like to watch the passing parade." When Stone and his associates began designing *El*



Ezra Stoller



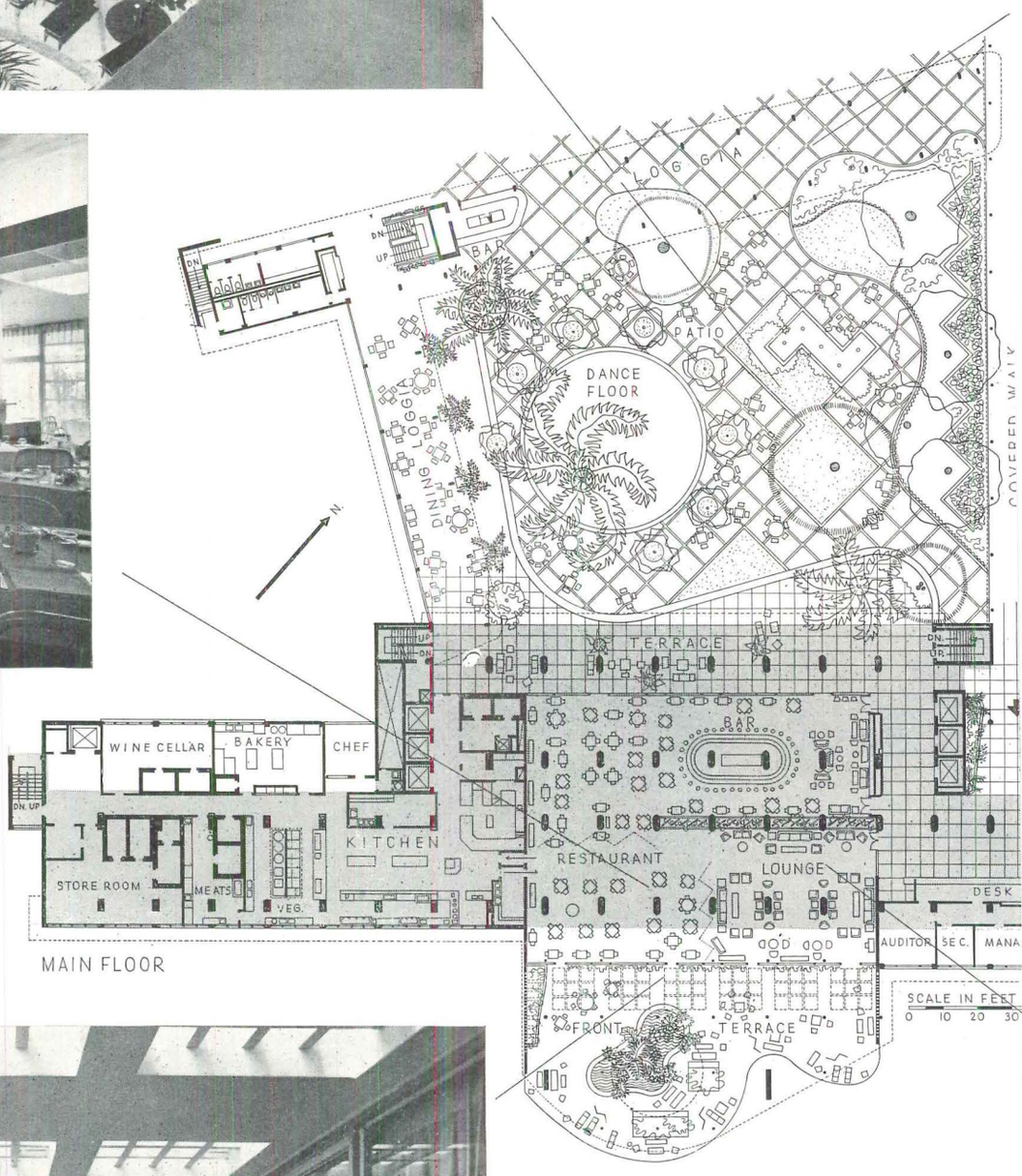


Paved and landscaped patio (left) has its own outdoor bar and dance floor. Covered walks around this patio (opposite) will serve as terraces for swimming pool under construction to west of hotel.

Photo (above): Thomas Church; (others) Ezra Stoller-Pictor



View of restaurant shows folding screens separating dining area from lounge. By moving screens around, restaurant can be expanded or contracted according to actual needs.



MAIN FLOOR



Stone-designed outdoor furniture on front terrace (left) was made in Arkansas home industries sponsored by Senator J. William Fulbright, is now distributed in U. S. View of lounge is shown opposite.

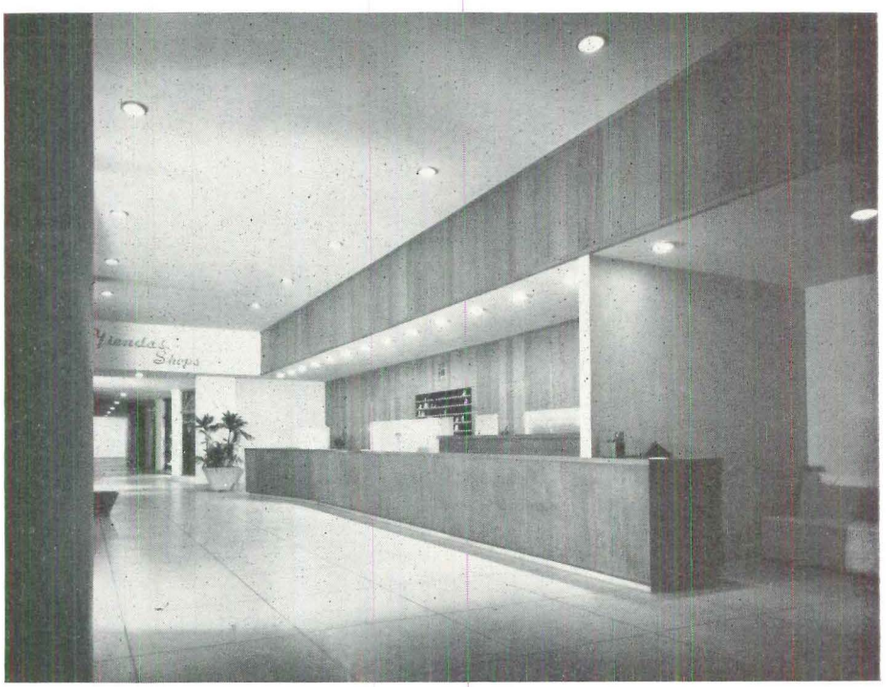


Panama, they soon found out that Kirkeby Hotels (who were picked to manage the hotel) felt exactly the same way. New York's *Gotham* and *Hampshire House,* as well as other Kirkeby-managed hotels have compact lobbies, waste no space on public shelters.

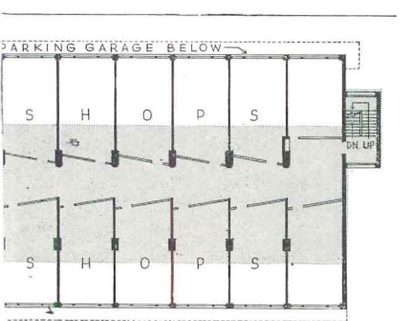
To make *El Panama's* lobby pay for itself, the architects turned the ground floor into one large public space. One part of it is the restaurant; another is the bar; a third is a lounge. None is separated from the other by more than a movable trellis or a plant box, so that the restaurant, on busy days, can spill over into the lounge (and contract again when business is slow); so that the bar rather than the "big clock" becomes *the* landmark in the lounge, ticking off profits rather than minutes while people wait to meet their friends; and so that the lounge itself is merely a sitting area from which waiting guests are naturally drawn either to the restaurant or to the bar.

In the *Caribe Hilton* most of the ground floor was left completely open to the outside. *El Panama's* public areas, however, were always meant to be sealed and air-conditioned—because it is hotter in Panama City than in San Juan, and more than twice as humid.

To make up for this separation of indoor and outdoor space, the architects (together with Landscape Architect Thomas Church)



Plan of El Panama's *ground floor (upper stories indicated with gray tone) shows air-conditioned restaurant, bar and lounge, wide open foyer, terraces, patio and shops. Reception desk is shown at right.*



have made the indoors look tropical with the aid of such stocks-in-trade as large plants, a native-theme mural by Witold Gordon, and a louvered screen made of strips of moss dripping with water and sprouting orchids! The brilliant sunlight streaming in through glass walls serves to heighten the illusion of a tropical conservatory.

The outdoor space has been treated in the opposite manner: Here are a bar, a dance floor, an extension of the restaurant—plus a whole series of pools, beds of flowers, serpentine walls and sweeping canopies. The canopies and the paved walks under them will eventually extend toward the west, link the hotel to a group of cabanas planned for future construction and intended to form the nucleus of a small country club.



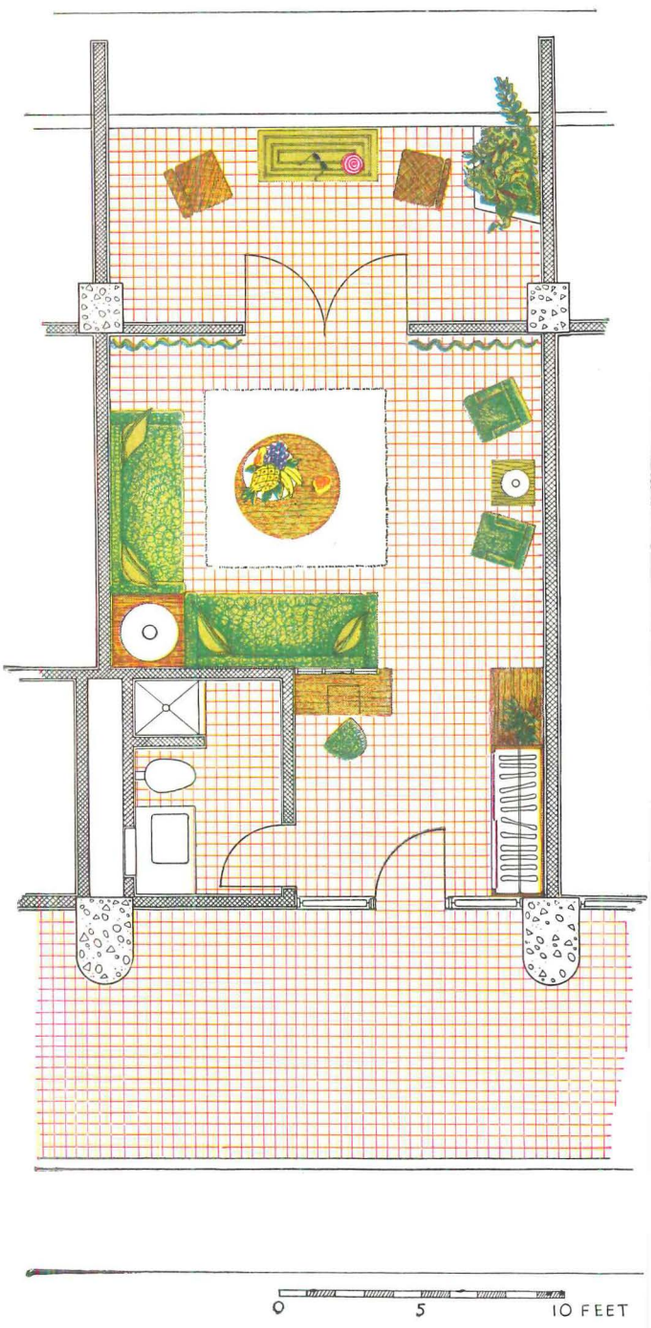
Rooms without doors

El Panama's open-planned ground floor is without doubt a major design achievement; similarly impressive, however, are the hotel's open-planned outdoor guest rooms on every floor. In the *Caribe Hilton* all rooms were air-conditioned (in part because the hotel's

Typical balcony has plant box, tile paving (as in the rooms themselves) and deep concrete overhang. Plants will soon grow over balcony rail, turn El Panama's *honeycomb facades into huge, colorful bowers. Typical guest room (below) is completely open to trade winds, has louvered screens on balcony and deck sides.*



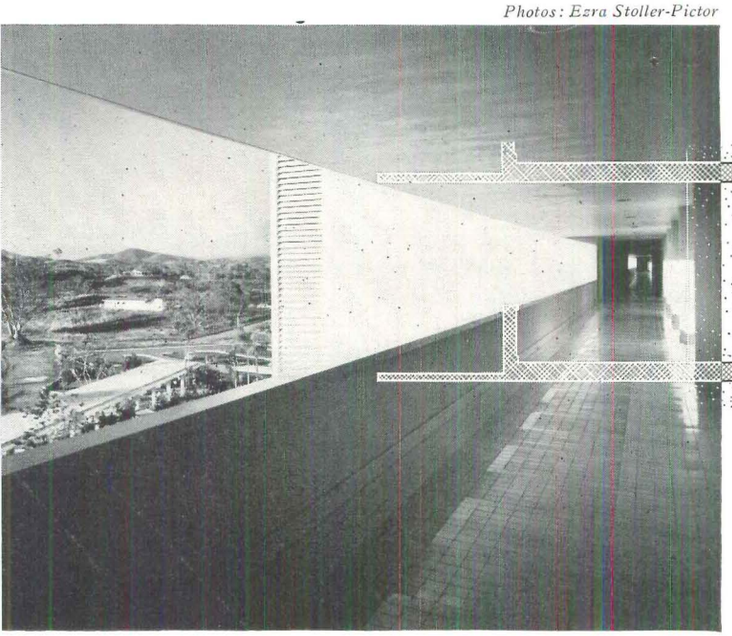






Model room (above) was set up at New York's Architectural League in March '50 and furnished by architects. Finished version departed somewhat from architects' plans.

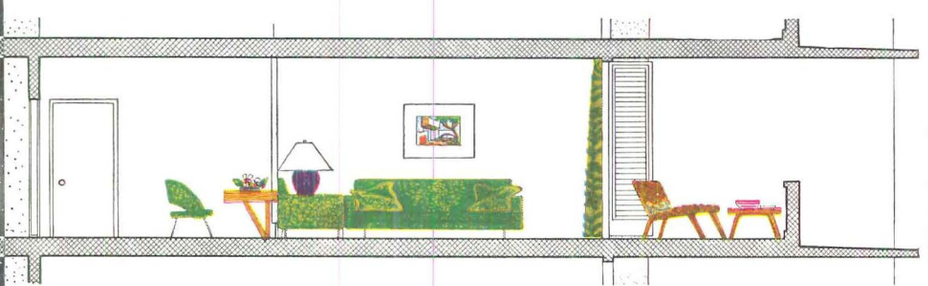
Photos: Ezra Stoller-Pictor



Open companionways up in the sky are architects' answer to windowless hotel corridors, afford spectacular views of Panama's tropical hills.

corridors were central and double-loaded). In *El Panama*, only the rooms in the central block have air-conditioning. Everywhere else the hotel is only one room thick; that room has louvered folding screens toward its balcony on the south, and a louvered screen toward the outside companionways (or decks) on the north. Because the architects raised their hotel high up into the sky, the trade winds from the northwest sweep right through the rooms, day and night. Said one recent visitor to *El Panama:* "The cross-ventilation in these outdoor rooms is sensational—one of the best things about the place." Other guests who were first assigned air-conditioned rooms asked to be moved to an outdoor room after a couple of days. They liked the artificial air-conditioning fine (it consists of high-velocity units in each room); but they found the natural trade winds more intriguing, saw no need to worry about Panama's malaria and yellow fever rates, both of which are now lower per capita than New York's. In any case, bugs don't fly above tree-top level, and all rooms are higher up than that. However, for timid souls, the architects provided removable screens over all guest room openings.

One look at Panama's climate charts makes the outdoor rooms seem like a minor miracle: Not only does it rain 3½ times as much in Panama as it does in New York (which is one reason for the deep overhangs that protect balconies and decks); but, in addition, Panama City's average temperature for the whole year is around 80° F. This means that it is *always* as hot in Panama as it is in Houston in July! To most architects these facts would have spelled year-round air-conditioning; to *El Panama's* architects they



meant re-thinking their architecture and producing a solution that will soon be copied in all hot and humid climates—and for all sorts of buildings.

Having turned the hotel room into an elevated breezeway, Stone and his associates re-evaluated the function of the hotel room as such, decided (as others had before them) that people like to be able to *live* in hotel rooms as well as sleep in them. Consequently, *El Panama's* rooms were designed for indoor-outdoor living: Each has its own full-width balcony with flower beds, each is furnished as a living room, and each has a small combination foyer-and-dressing room screened from the rest of the apartment.

To study the problem, the architects built a full-size, fully furnished model room (see cut), exhibited it at New York's Architectural League in March of 1950 to get public reactions. Budgetary reasons made it impossible for the clients to carry out this design in every detail, and Decorator Florence Hayward (responsible for interiors) was forced to compromise here and there, while retaining much of the spirit of the original design. Yet the finished job still represents some advance over the *Caribe Hilton's* guest room arrangement which made little use of the entrance foyer for dressing room purposes.

Basic rates for the hotel rooms start at $8 a day for one guest, $12 for two. In the central block, two rooms were combined



Roof of El Panama *has two-story restaurant for formal dinners, circular bar underneath mezzanine and gambling casino above. Roof terraces extend restaurant space on all sides.*

to produce air-conditioned suites that rate from $18 a day to as much as $26. The Presidential Suite—a four-room affair—rents for $40 to $56, depending upon the number of guests using it. These rates, very close to those of the *Caribe Hilton,* seem entirely reasonable in a hotel of this caliber.

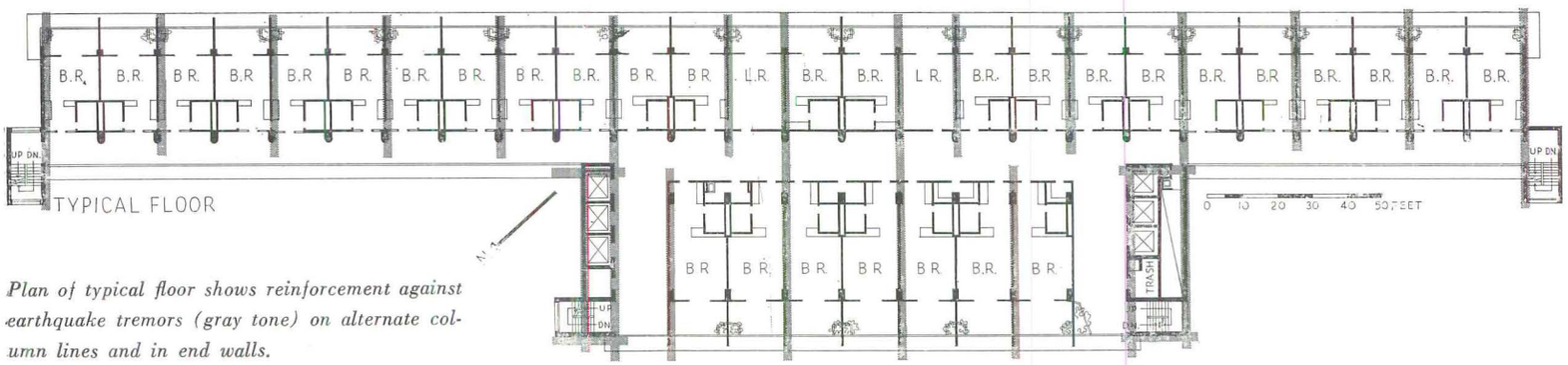
Structure without tremor

The deep concrete overhangs that protect *El Panama's* balconies and decks against sun and rain are part of a daring 9 ft. cantilever designed by Structural Engineer Fred Severud. These sunshades and their vertical dividers give the hotel its distinctive honeycomb look. But at a distance from the south, *El Panama* looks like nothing so much as a tall ship riding green waves of grass (see p. 138).

As a matter of fact, that illusion isn't entirely false: Upon Panama's volcanic soil, Engineer Severud designed the structure to withstand the tremors of occasional earthquakes, anchored the hotel "fore and aft" to keep the concrete frame secure. To do this, Severud used the concrete end walls as well as the elevator shafts at both sides of the center section as stabilizers, designed every transverse beam to withstand shocks (see plan). Unusual soil conditions forced him to sink steel piles through volcanic soil on one side of his building, use spread footings on the other. However, there is no expansion joint between the two halves of the building; the structure is treated as a monolithic whole above the foundations, and Severud confidently expects both halves to behave alike under the impact of any tremors the earth many transmit.







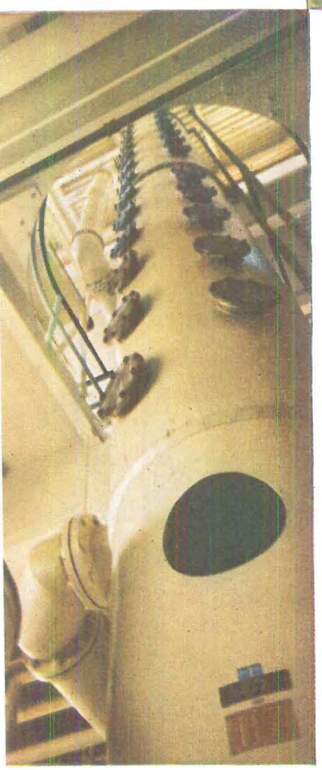
Plan of typical floor shows reinforcement against earthquake tremors (gray tone) on alternate column lines and in end walls.

Venture without equal

Panamanians are as unworried about *El Panama's* future as Severud is about its stability. They know that the hotel has no rival for miles around. The old, 200-bed, wood-frame *Tivoli*, which, according to local experts, stays together only because the termites are holding hands, closed its doors by prearrangement the day *El Panama* opened. Moreover, there are no rivals in the country-club league either: Wealthy, entertainment-starved Panamanians now flock to their new hotel, dance and dine on its roof terraces, gamble in its casino, drink at its bars. The Union Club in downtown Panama City, once the social center of the capital, barely met its expenses the night *El Panama* opened, has been running a poor second ever since. Thus, to citizens of the small Republic, *El Panama* is the undisputed center of the smart set; to airline pilots and passengers switching planes midway between North and South America, the hotel is an exceedingly pleasant stopover; and to an increasing number of tourists (who come for some of the best deep-sea fishing in the world), *El Panama* is the answer to a vacationist's prayer.

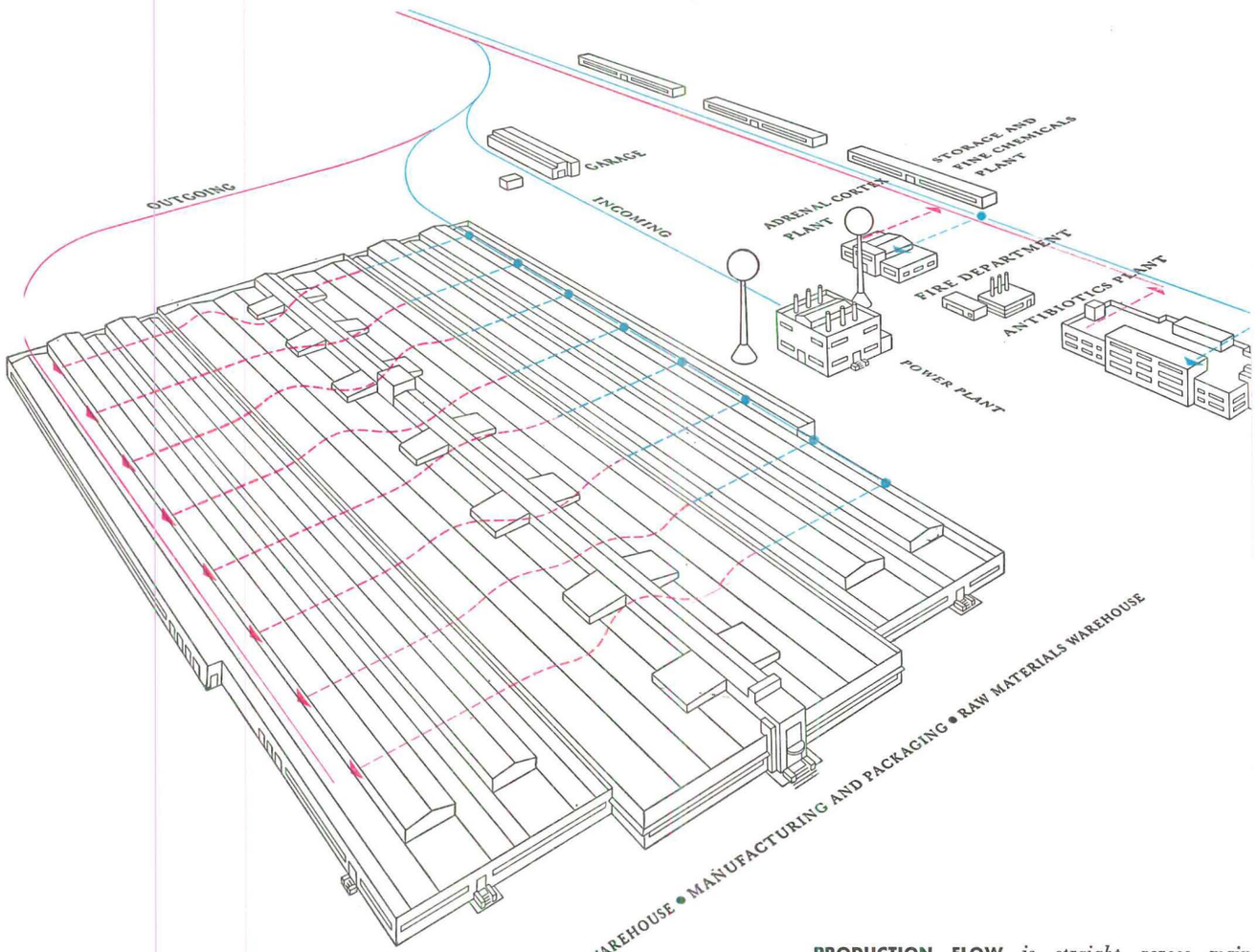
All this is excellent news for a group of young and progressive Panamanian businessmen who invested in *El Panama's* future. Three hundred stockholders put up $1 million; other Panamanian interests bought up a $2 million bond issue; and the remainder of the building's cost—$2½ million—was met by credits from the U. S. Export-Import Bank. With new hotels springing up in Italy, Hawaii, the Virgin Islands, Venezuela and elsewhere, *El Panama* is the latest contender in an increasingly competitive field; and with just about every Panamanian rooting for the new hotel, it seems destined to be one of the most successful contenders to date.

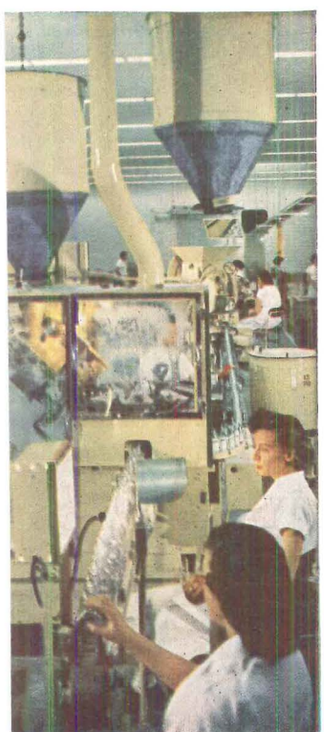




FLEXIBLE FACTORY: The Austin Co. delivers ne

THE AUSTIN COMPANY, Engineers and Builders





PRODUCTION FLOW *is straight across main manufacturing building, as diagrammatic sketch shows. Penicillin and other antibiotics are produced in a separate two-story and basement structure (r.) where process vats extend the full building height. Production of adrenal cortical and other hormones is also concentrated in separate explosion-proof building. Other small buildings shown (r.) are powerhouse and fire station.*



Ezra Stoller—Pictor

lt-in flexibility, including a real innovation in ceiling construction

n the vast new world of pharmaceutical manufacturing, vhere the miracle molds have replaced yesterday's herbs and lixirs, the normal demands made by industrial process on ndustrial plant are raised to a kind of nth power. To a re-narkable extent, the mammoth new plant of the Upjohn Co. utside Kalamazoo, Mich. is like some precision-engineered aboratory instrument. To accomplish this kind of precise ccommodation in a plant where some 33 acres are under oof is an assignment big enough to stagger even today's uilding technology: here the normal mechanical services ave been so highly developed as to point some new direc-ions for all kinds of industrial building.

The other major demand set by this kind of manufacture lso shows, in a very exaggerated way, what today must be one in almost all kinds of factory building. This is to pro-ide for a complete flexibility of future operations—room o expand, room to install new machines, room to convert uickly from one product to another.

In the pharmaceutical industry, which has paced medi-ine's vast Twentieth Century conquests, this demand has eached almost explosive proportions. Penicillin, streptomy-in, aureomycin, terramycin—these are only the most spec-icular names in a marvelous progression which has changed oth the shape of man's fate and the shape of the pharma-eutical industry's buildings. Not many years ago, for ex-mple, the nation's whole supply of penicillin came out of aboratory bottles—now Upjohn makes penicillin in stainless eel vats which stretch the height of its new two-story anti-iotics building.

Upjohn's old manufacturing building was a 12-story ele-ator structure in downtown Kalamazoo. Over the last decade f rapid medical discovery, Upjohn had been obliged to add ne new department after another. Sometimes this had eant breaking up the new process by squeezing out space n several different floors. Aware that the pace of medical dvance may be even faster in the years ahead, Upjohn's production executives set flexibility as their No. 1 goal in the new building operation.

This is exactly the kind of assignment which fascinates the research-minded engineers of The Austin Co., a firm conspicuously devoted to the notion that the fullest possible definition of function must precede the definition of building plan. Working closely together, Austin and Upjohn engineers together delivered a building whose important contributions to the science of industrial design include:

- A new (and patented) integrated ceiling, in which "troffer" beams carry lighting and also support duct work and sprinkler lines. This ceiling system is figured to have made a net saving of more than 40 cents a sq. ft.

- An air conditioning system providing over 100 different zones of varying temperature and humidity—the most intricate installation Austin has ever made.

- A layout which, by lining up space in four big slices—incoming warehouse, production, packaging, outgoing warehouse—enabled Upjohn for the first time in its history "to accomplish everything in one motion" as C. V. Patterson, director of the production division, puts it.

- A "sandwich-like" organization of the building cube, which puts all air conditioning equipment in the truss area above the finished ceiling and all piping and other service connections in the basement area below the main manufacturing floor. This means that all these services are instantly available for maintenance, repair or change-over operations.

- A battery of built-in provisions for flexible use of space.

- Employee facilities of a pace-setting character and amplitude.

- A comprehensive use of color keys for production efficiency and safety.

- Some ingenious uses of common construction materials.

LIFT TRUCK is the key to a continuous flow of materials through one-story layout, also helps

Here is one more layout designed around that familiar industrial pack-horse—the lift truck. In this plant, the lift truck is not only the basic tool for moving raw materials and finished goods—it is also a prime instrument of the flexibility so urgently sought by Upjohn's production engineers (see cuts, below). The basic plan of the main manufacturing building is in four big strips: 1) raw materials warehouse with inside unloading railroad spur and trucking docks; 2) manufacturing area; 3) packaging area; 4) outgoing warehouse and loading facilities. This simple horizontal scheme replaces a scattering of manufacturing operations on six floors and a basement in Upjohn's old building in downtown Kalamazoo, while the whizzing army of lift trucks and tractors replaces the old bottleneck of freight elevators. The great warehouse area (1½ times the space allotted to manufacturing) replaces five separate warehouse buildings Upjohn formerly rented downtown.

Departmental allotment of space within this over-all scheme was worked out by placing miniature models of machines on a scale layout. Upjohn executives are very enthusiastic about this kind of planning: "It caught at least one mistake in machine placement which would have been very expensive. It proved to be the best kind of personnel relations—for it enabled us to bring into the planning operations the men who actually run the machines and to profit by their many valuable suggestions."

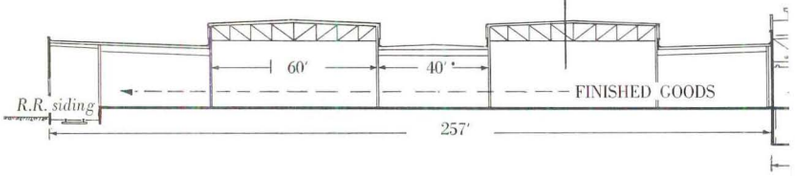
Upjohn is close-mouthed on figures, but the savings already realized by this "all in one motion" layout are tremendous. One measure: despite a 60% increase in production capacity, there has been no increase in personnel over operations in the old plant (now converted entirely to research facilities).

Of equal importance to Upjohn is the fact that this simple plan will permit future expansion of both warehouses in correct proportion to increase in factory space. Working closely with Upjohn's own engineers, Austin planners provided for future flexible use of space in a number of ways illustrated at right.

Hedrich-Blessing Studio



FINISHED GOODS *are stored in warehouses like this which occupy the west third of the structure. There has been no attempt in this area to maintain the close atmospheric and lighting controls provided in production and packaging departments. Monitor type construction, with 60′ welded trusses and 40′ jack trusses in the two high bays, provides ample room for pallet storage.*



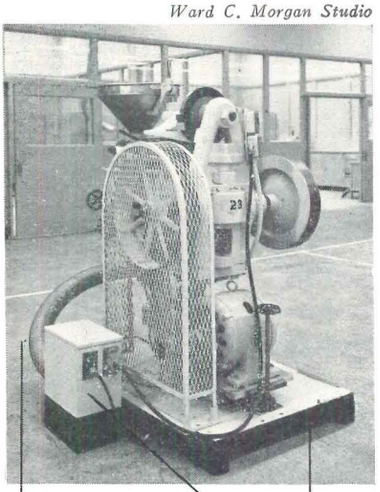
Ward C. Morgan Studio



filled bottles repacked — *empty bottles unpacked* — *carton conveyor* — *bottle filling line*



portable 1000-gallon tank — *lift truck*



vacuum dust exhaust — *pallet* — *standard service box*

IMPORTANCE OF MECHANICAL HANDLING *in saving labor costs can be gauged by this tiny conveyor, designed by Upjohn's own engineers, whose sole purpose is to move cardboard cartons a distance of 20′. Bottles are removed to production line; emptied cartons travel by conveyor for repacking at other end. Role of lift truck is dramatized in fluids department. In old plant, cough syrups, etc. were mixed on one floor, flowed by gravity through pipes to bottling on floor below. Production engineers considered overhead pneumatic piping to convey fluids in one-story plant, finally realized that movable tanks, pushed by lift truck from mixing to bottling area, would save trouble of cleaning and changing piping every time fluid mixtures were changed.*

FLEXIBLE USE OF FLOOR SPACE *is provided by standard service boxes in many departments. Boxes provide plug-in machine connections, have outlets for both 440 and 110 voltage power, a compressed air line, and a vacuum exhaust tube for dust removal. Note how light tablet compressing machine is mounted on pallet for easy moving by lift truck to another location.*

ovide for easy future changes

Ezra Stoller—Pictor

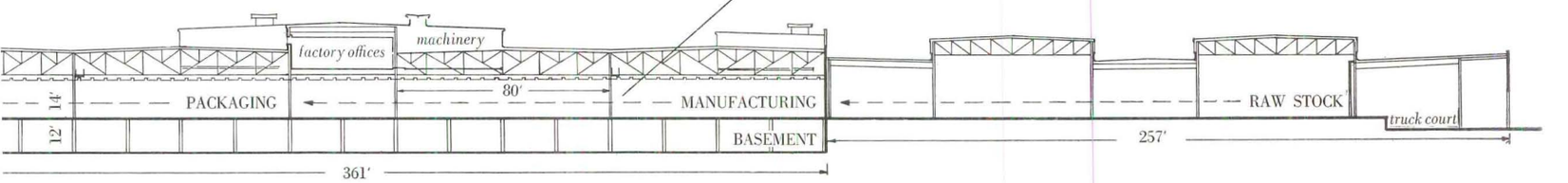




Hedrich-Blessing Studio

FACTORY OFFICES *are housed in 40′ wide mezzanine which extends the length of the plant (see center of cross section, below). Natural lighting is provided by the clerestory which extends above the roof line of air conditioning penthouses flanking the mezzanine. Continuous fluorescent troffer lighting is installed in the metal acoustic ceiling.*

CENTER MANUFACTURING SECTION *is 360′ wide and flanked on both sides by warehouse space with enclosed railroad spurs and truck docks. A central aisle divides manufacturing space into processing and packaging areas. These are fully air-conditioned and completely dependent on artificial lighting. Basement holding employees lockers, medical facilities, etc., extends under manufacturing area. Central basement corridor gives access to manufacturing area. Warehouse for incoming raw materials extends for 260′ at right of cross section; warehouse for finished goods extends for 260′ at left.*



CROSS SECTION *shows how Austin's H-section welded trusses are used to provide 80′ spans in manufacturing and packaging areas. Columns are spaced 40′ apart along length of plant, which stretches for 1,120′. These big bays provide a maximum of unobstructed floor space and mean great flexibility for future changes. Unloading along the 1,120′ length of the incoming warehouse is planned so that all raw materials will be stored at a point directly in line with the point of manufacture. Thus lift trucks are able to move in a straight line—carrying raw materials to processing departments, processed goods to packaging departments, and packaged goods to outgoing warehouse. Doors in fire walls between building sections are operated by electronic eyes.*



knock-out pipe sleeve



Hedrich-Blessing Studio

BUILT IN FLEXIBILITY *is provided by more than 25,000 knock-out pipe sleeves to accommodate future changes in location of machines. In areas like this (left), they were placed on 4 ft. centers in two directions before floor slab was poured. Piping and all other services needed to operate machines on first floor were hung from concrete floor slabs as shown in photo (left). The basement underneath the whole production area gives direct access to this piping for maintenance and any new machine installations. Piping is arranged in five levels below floor slab and identified by color. Knock-out pipe sleeves mean that any of this piping can be brought up for first floor connection without cutting the slab.*

INTEGRATED CEILING: load-bearing steel beams become trough for lighting

Anybody who has designed a "flexible" or "integrated" ceiling — one of these intricate assemblies of lighting fixture, acoustic panels, air diffuser, sprinkler heads, channels, clips, hangers, etc.—and then watch-dogged his system through the jeopardies of construction will have a real feeling for the problem Austin designers faced when they set to work on such a finished ceiling *to cover an area of 400,000 sq. ft.* "Our preliminary design made on the usual basis," one of Austin's executives recalled, "looked pretty clumsy. We asked ourselves —Can't we do something better?"

The something better turned out to be Austin's revolutionary and patented ceiling system detailed on these pages. Here lighting has actually been integrated with structure. Basis of the system is the trough-like or "troffer" beam, formed from heavy gauge sheet steel. Fluorescent lighting fixtures are set directly into this beam, which also serves as a wiring raceway eliminating all conduit. These troffer beams mean the elimination of all hangars and other special frame work ordinarily used to support lighting, ceiling tiles, duct work and sprinklers lines. The new beam can safely carry a concentrated load of 1,600 lbs. With troffers spaced 4 ft. on centers, this means a uniformly distributed load capacity of 40 lbs. per sq. ft. Troffer beams in 20 ft. sections are held in place by clamps which have been bolted to the bottom chord of Austin's H-section welded trusses. Steel nailing channels to which ceiling tiles and boards are fastened run across the troffer beams. Austin believes this system will be practical for all types of buildings where a large finished ceiling is required.

Austin claims these as the main advantages of its new ceiling system:

Reduced cost of at least 40 cents per. sq. ft. due to reduced quantities of materials and simplified installation.

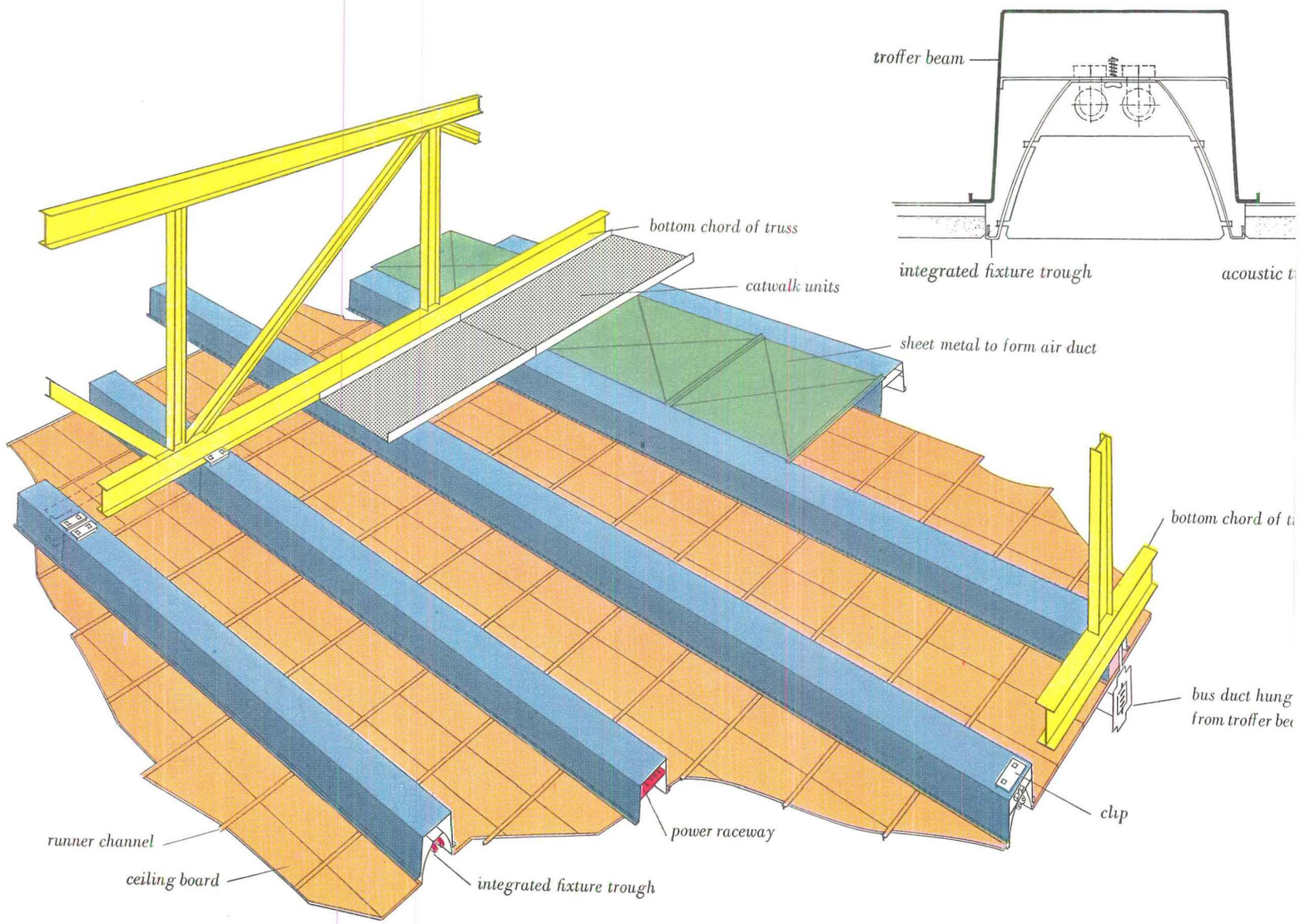
Increased lighting flexibility. Every other troffer beam is covered over by ceiling tile, which can be easily removed for installation of an additional strip of lamps and reflectors.

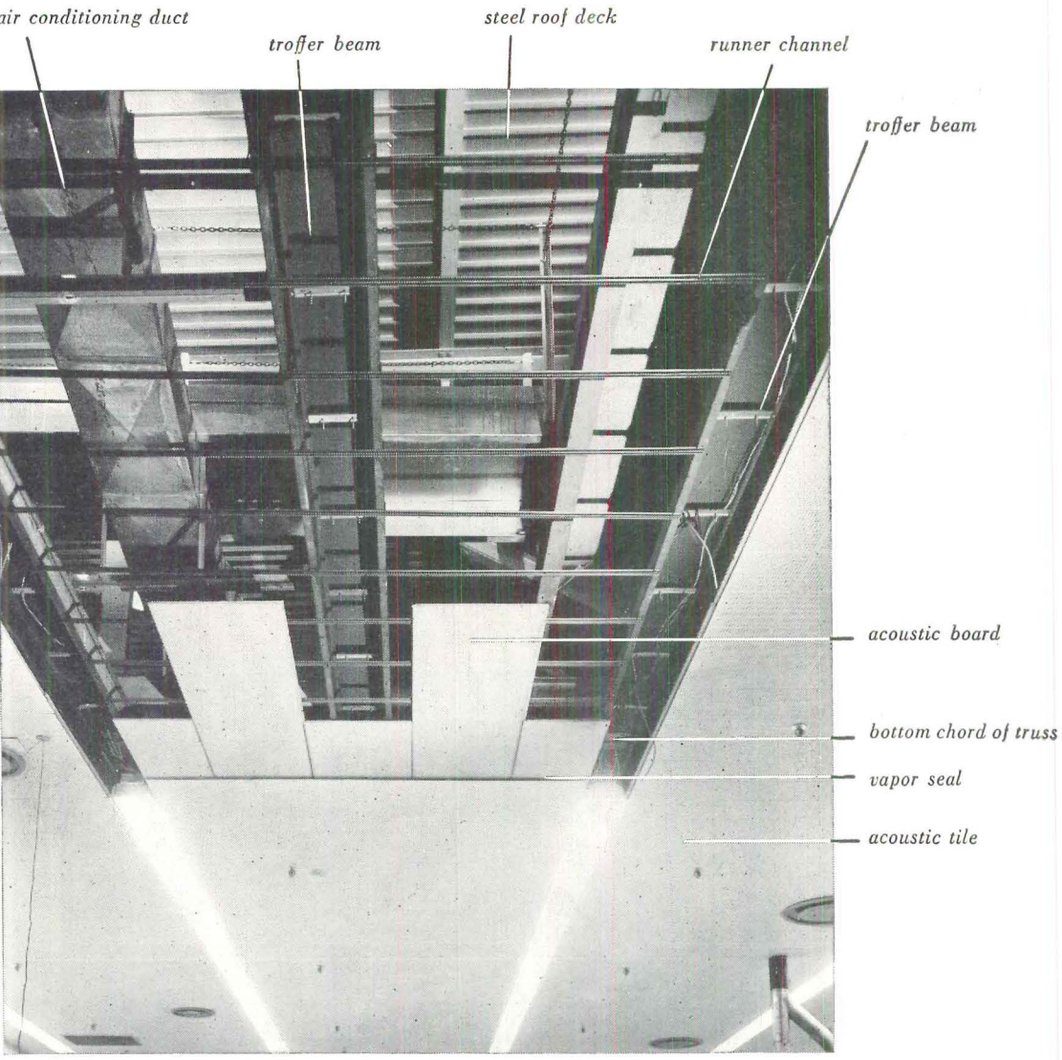
Much easier installation of building services. Elimination of supporting steel means open space above the ceiling, giving more room for duct lines, etc. The troffer beams themselves served as a work scaffolding; plywood planks were thrown across from beam to beam, permitting workmen to move around with all the ease of a floor operation.

Simpler vapor sealing. Seal extends from troffer beam to troffer beam, with each beam acting as a tight dam.

Easier cleaning and maintenance in attic or truss area. Only exposed surfaces are the flat surfaces of the troffer beam.

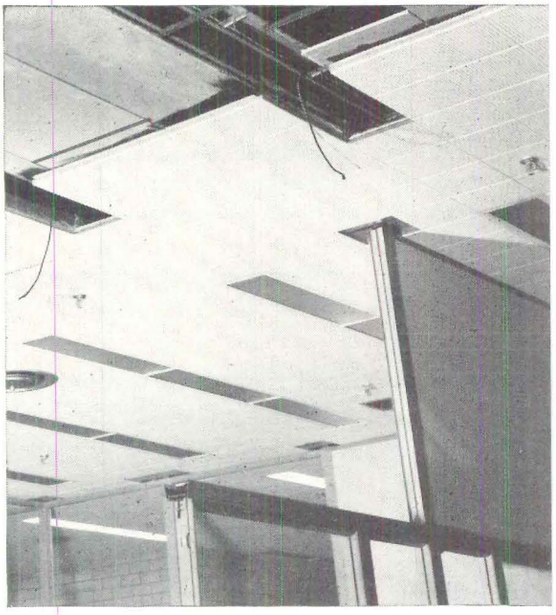
More securely mounted lighting fixtures as compared with clip-on systems. Lighting reflectors in 4 ft. lengths are easily removable for bucket washing.





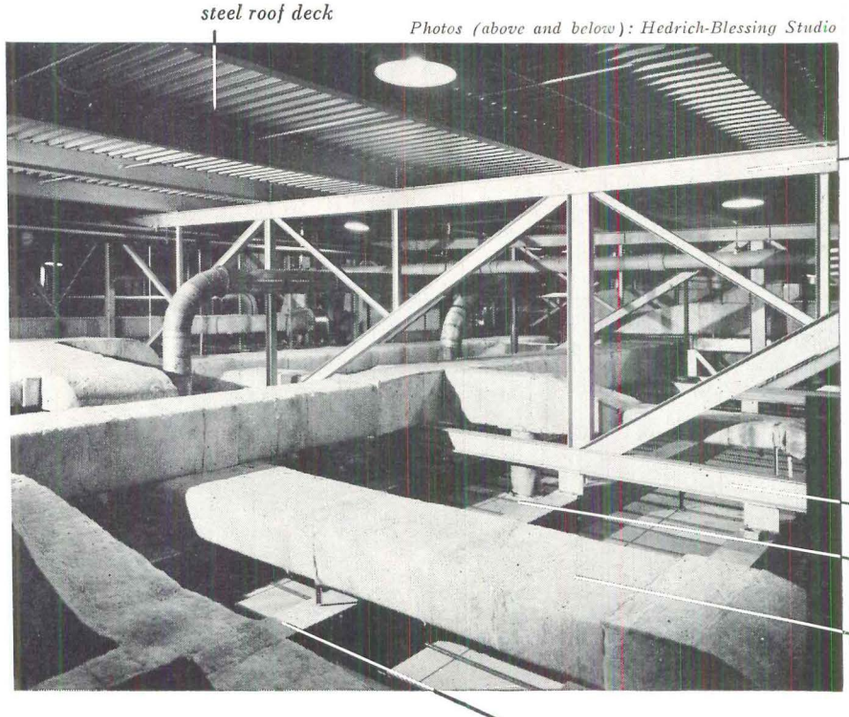
TROFFER BEAMS, *as shown in construction photo (l.), extend from truss to truss and were fastened to the bottom chords. Three of these trofer beams are shown, two on either side with continuous fluorescent lighting units already installed and one in the center without lighting. Runner channels to which ceiling board is fastened can be seen extending across the middle trofer which will be covered over with ceiling tile. If there is a future need for raising the lighting level, additional fixtures can easily be installed in this middle trofer.*

Ezra Stoller—Pictor



FLEXIBLE METAL WALLS *are used to enclose special departments on main manufacturing floor. Photo (above) shows how easily these can be attached to the integrated ceiling. Photo (l.) shows how trofer beams, because of their structural strength are able to support air conditioning duct, air diffusers, sprinkler pipe, etc. Usually such equipment must be suspended from purlins by elaborate hanger system.*

Photos (above and below): Hedrich-Blessing Studio



ZONAL CONTROL: precision air conditioning provides 100 differing climates

The intricate air conditioning system designed by Austin moves some 2,810,326 cu. ft. of air per minute. It is made up of over 100 individual systems, each one designed to supply air of specified temperature and humidity. These requirements range from the standard comfort conditions in plant offices (80° DB, 50% RH) to a room where handling of hydroscopic materials requires holding humidity to 10% or less.

Air conditioning equipment is concentrated on reinforced concrete platforms framed directly into Austin's standard H-section welded trusses. Some 28 of these platforms are above the manufacturing area; 8 additional platforms hold equipment for controlled air supply to parts of the warehouse where perishable raw materials and finished goods are stored. The basis of the whole elaborate plan to set up a general average condition throughout the plant of 75° DB and 40% RH and to supplement this average condition by adding special filters, chilling or heating coils and dehumidifiers where more refined conditions are necessary.

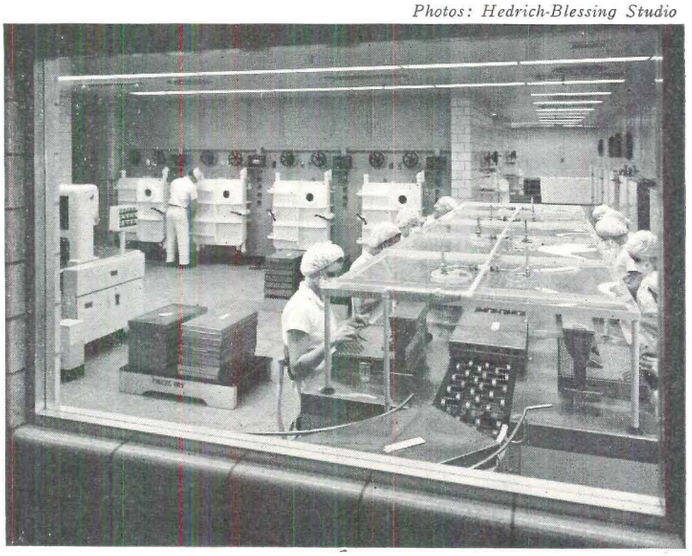
Air filtering, for example, works like this: For general average supply, air is drawn in from roof intakes by the big fans at a rate of over 30,000 cfm and passed through a standard mechanical filter (screens cleansed in oil bath). Where air is supplied to Upjohn's sterile process areas, more cleaning is necessary and air is passed through electromatic filters, then through a chamber where it is irradiated by ultraviolet lamps.

Standard chilled water coils bring air down to the average 40% RH. Where humidity must be further reduced for supply to special process areas, air is run through large or washer-type absorption dehumidifying units.

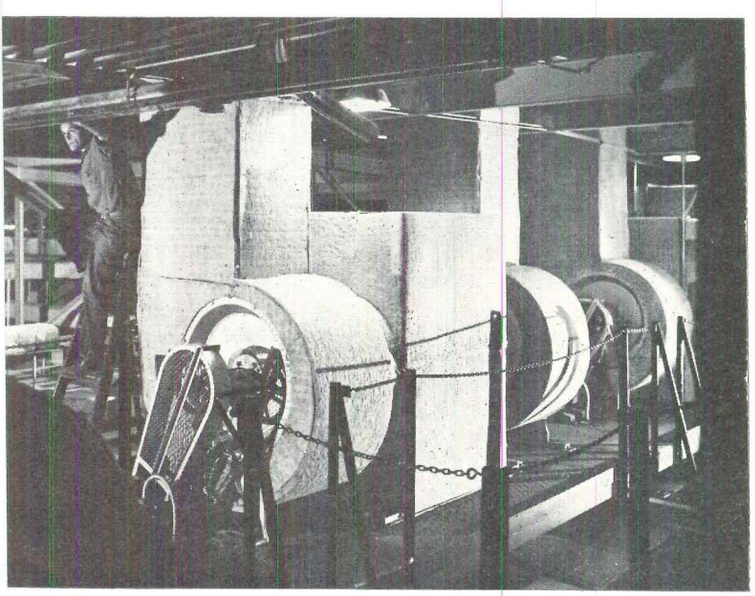
This vast and elaborate system will eventually be automatically operated by time clock controls (now being installed) which will start and stop equipment at specified times. A good example of Austin know-how: Controls are lined up on panel boards in exact and consistent patterns which show maintenance men instantly what type of system they are dealing with.

Some other items underlining the care with which every detail of the huge installation was worked out: At major intake points, double inlet fans set in plenum boxes are used to save space between ceiling and roof deck. In a portion of the office where electric business machines are used and rate of heat gain is high, Austin engineers decided that cooling this area with standard diffusers would mean an uncomfortably high velocity. Instead they used a small ceiling plenum, with gentle air leakage through a perforated pan.

Photos: Hedrich-Blessing Studio

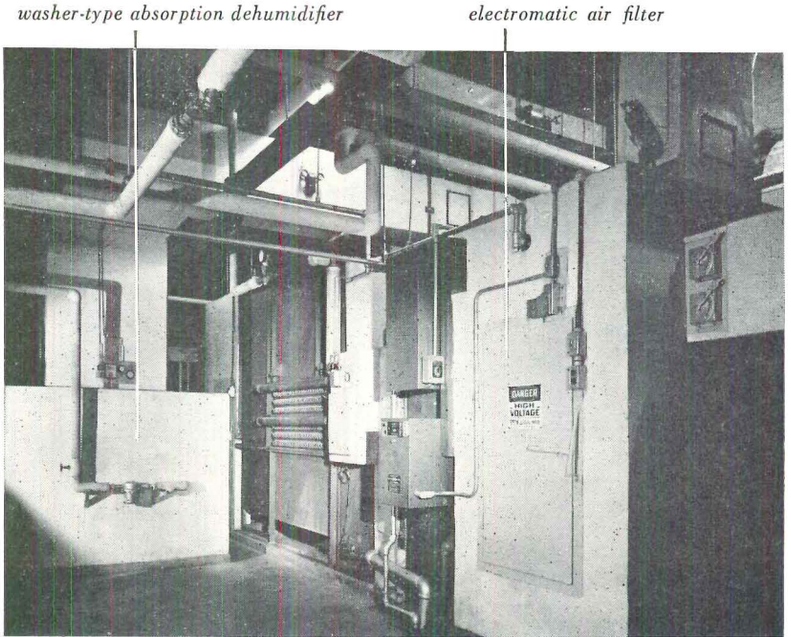


"FREEZE DRY" DEPARTMENT, *seen through vision panel in tile corridor wall, is an example of process requiring sterile and dry air supply. Employees wear sterile masks. Enameled hardboard ceiling and walls are washed in antiseptic solution once a week.*



REINFORCED CONCRETE PLATFORM *holding air conditioning equipment is framed directly into trusses. There are 28 such platforms over manufacturing area, each one holding proper combination of humidity, temperature and atmospheric controls for zone it serves. The 100,000′ of duct work is insulated throughout; engineers say insulation will pay for itself in two years in fuel saving.*

washer-type absorption dehumidifier *electromatic air filter*



AIR CONDITIONING STATION *serving dry process departments hold electromatic filter (r.) and absorption dehumidifier (l.).*

COUNTRY-CLUB-LIKE PLANT will provide everything to keep employees happy

Like most manufacturers, Upjohn had nursed some hopes of salvaging its downtown manufacturing building (only 15 years old) by enlarging capacity on this site. Two engineering studies showed the overwhelming advantages of a horizontal layout over any further additions to the downtown multi-story building, but the real clincher for Upjohn was the realization that only a move to the suburbs could provide room for the additional expansion that would almost certainly be necessary in the future. Accordingly, the firm gave the nod to Austin's one-story plan and acquired a suburban site amounting to 1,500 acres. This tremendous acreage Upjohn foresightedly plans to use in solving some of the problems involved in moving its 1,600 employees to a suburban location. Land adjacent to the plant is already developed by attractive landscaping, by recreation facilities used both at lunch-hour and after work, and by adequate parking which can be left at rush hours without congestion. Recognizing that shopping would be a problem for women workers used to lunch hours in the downtown shopping district, Upjohn asked architect Victor Gruen to make plans for a shopping center near the plant, in which one of the Kalamazoo department stores will probably be the prime lessee. Architect Gruen is also at work on plans for employee housing. Upjohn, anxious to avoid any of the overtones of "company housing," hopes to build a dozen or so houses for employees as a pattern, then sell lots and encourage employees to build their own houses. (Shopping center and housing plans, as a fine example of the integrated development necessary to put suburban industrial relocation on a sound basis, will be shown in a future issue.) For a glimpse of Upjohn's abundant in-plant provisions for employee health and morale, see cuts.



RECREATION LOUNGE *for employees adjoins cafeteria in right-hand corner of building on the main floor level. An adjoining indoor recreation area has ping pong tables and shuffleboard courts. Picnic tables and garden furniture are provided on terraces outside for warm weather relaxation.*



THREE BIG LUNCHROOMS *(below) have been provided on basement level adjoining locker rooms. These snack bars are in addition to main floor cafeteria. Employees use them at mid-morning and mid-afternoon rests. The 90-seat auditorium (right) is also on ground level.*



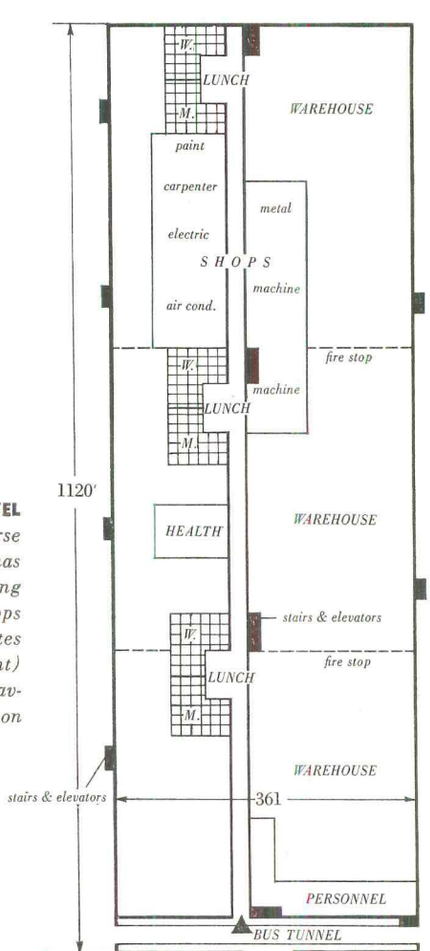
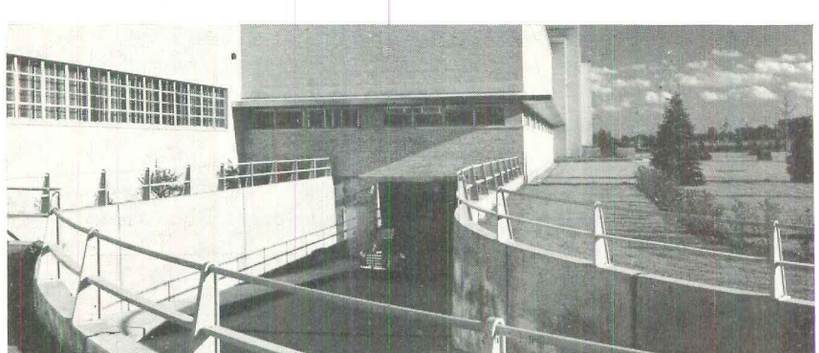
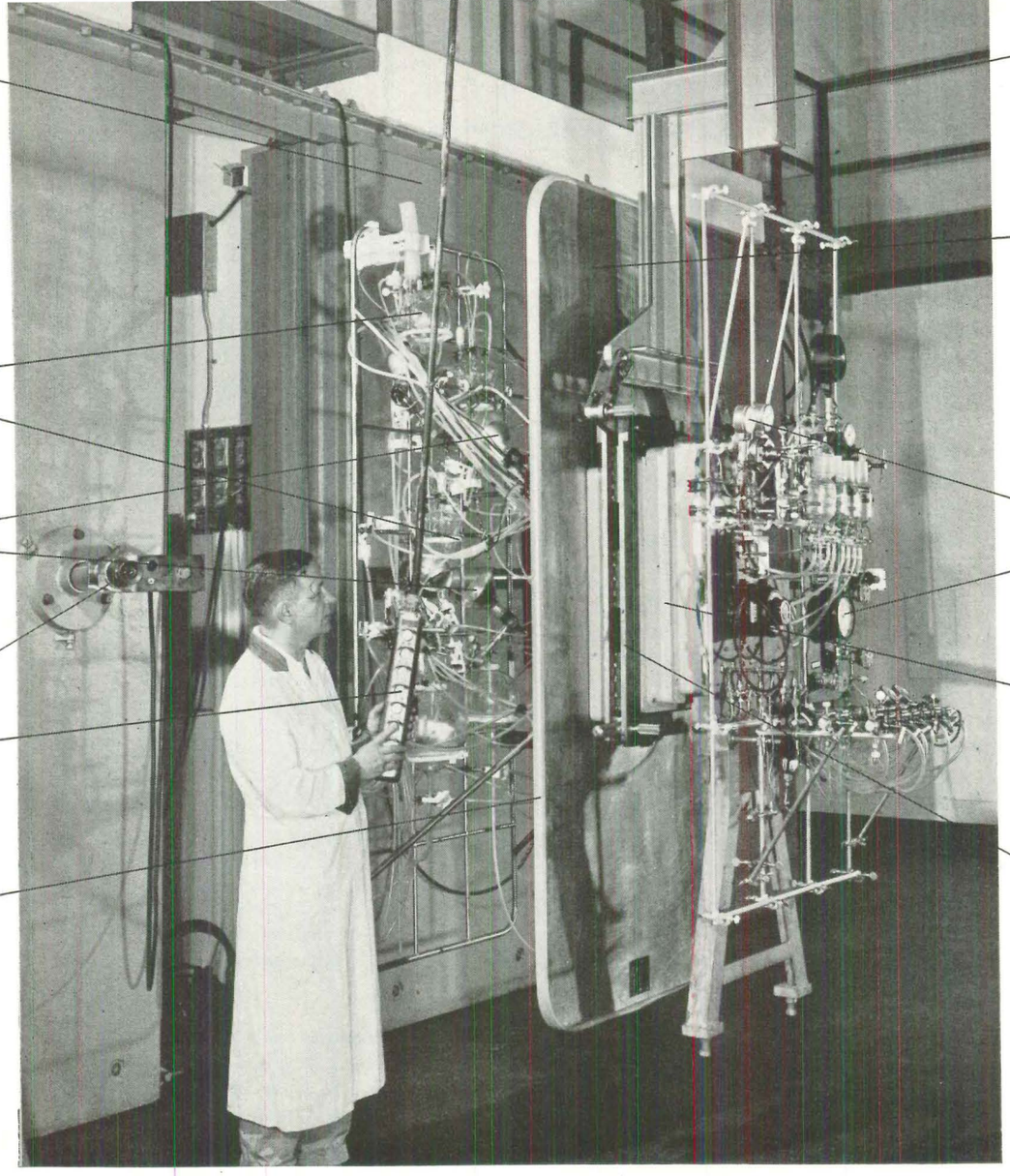


DIAGRAM OF BASEMENT LEVEL *shows bus unloading concourse and how long central corridor has direct access to manufacturing floor by three stairways. Shops (Upjohn designs and fabricates much of its process equipment) are also on this level, as are lavish health facilities, provided on the scale of a hospital clinic.*

BUSES *bringing employees to work drive right into basement unloading concourse located below plant offices on ground level.*



Photos: Ezra Stoller—Pictor and



11-ton door moves to right after equipment is mounted in cell hidden behind panel.

Maze of glass is locked inside hot cell, operated remotely.

Strong electric lamps illuminate key points of each experiment.

Each door has a separate periscope.

Overhead crane for moving equipment has mobile controls.

Plastic gasket is inflated to make tight seal around panel.

Panel is supported by traveling crane, permits entire assembly to be easily moved.

Idea of mobile panel is great technical advance. Complex equipment is built, assembled, tested in cold area, then moved into place. When doors are closed radioactive material is lowered through ceiling.

Elaborate instrumentation and controls remain on the outside.

Cell doors have cut out sections that fit tightly around this block.

This lifting clamp is removed after panel is fitted into place.

"HOT LAB"

Atomic research requires new concept in laboratory planning and construction

With this first report on the Brookhaven "hot lab," the great atomic age is ushered into constructive use in private industry.

A new requirement—the handling of radioactive isotopes—will soon be changing the design of many new laboratories.

Already more than 400 colleges, hospitals, industrial and other laboratories are using this new research tool. This large number is an indication of the rapid growth of peacetime research in this new field.

Located at Camp Upton, Long Island, Brookhaven has an imposing array of "firsts" to its credit. It is the First Laboratory for handling highly radioactive materials which can be described in detail. It is the first of a new type of laboratory devoted to nonmilitary applications of atomic energy. Many of its design features are original and used here for the first time. It provides more flexibility than earlier "hot labs."

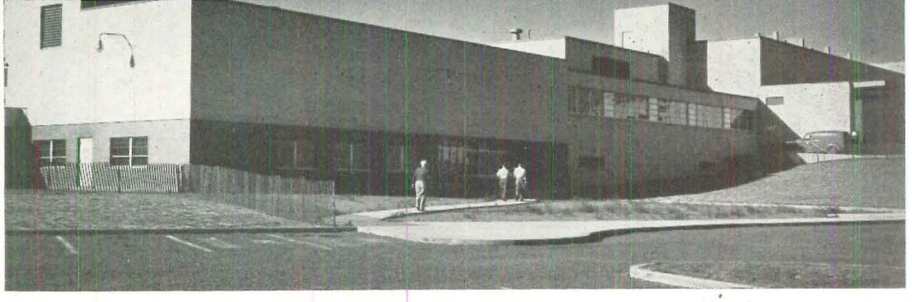
Above all it has significance for architects and engineers because it provides basic lessons that can be adapted for use in other research centers.

The Brookhaven "hot lab" is different from any other building in the country.

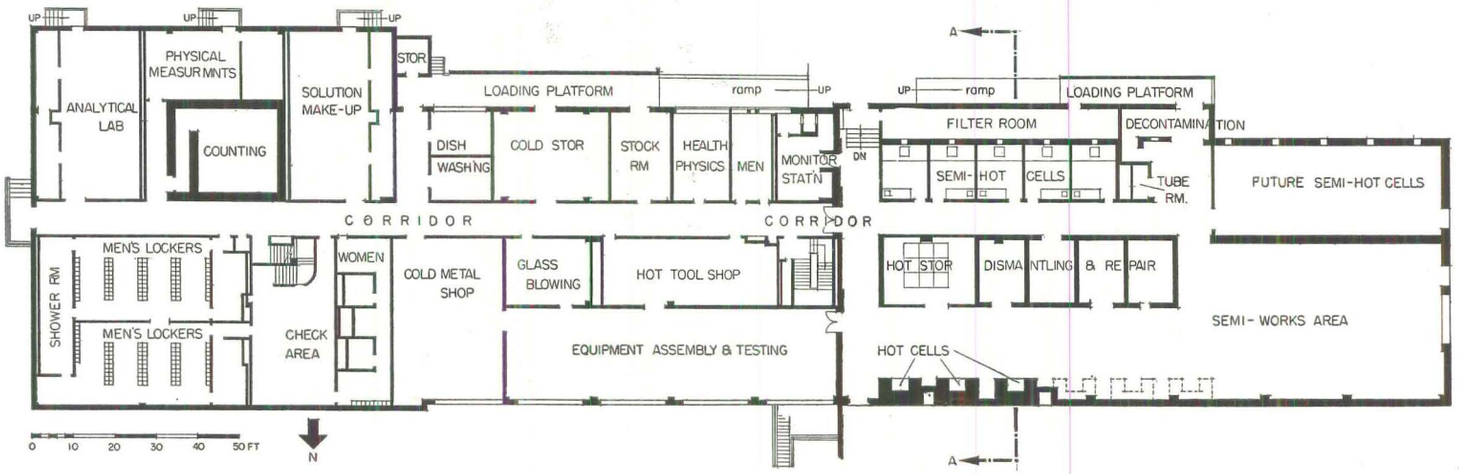
It is different in design and construction because the work done there is different. Scientists work with hotter (more radioactive) materials than in any other nonmilitary laboratory. Because they have widely diversified interests, they require more flexibility than is provided by other hot labs.

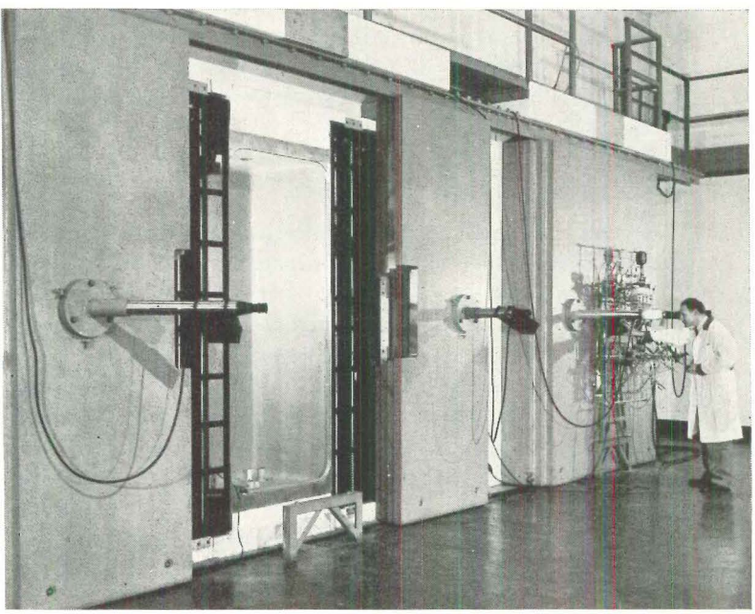
The design of the building is the result of three basic aims set by a planning team representing Associated Universities, Inc. (which operates Brookhaven under contract with the AEC) and the H. K. Ferguson Co., designer-builders:

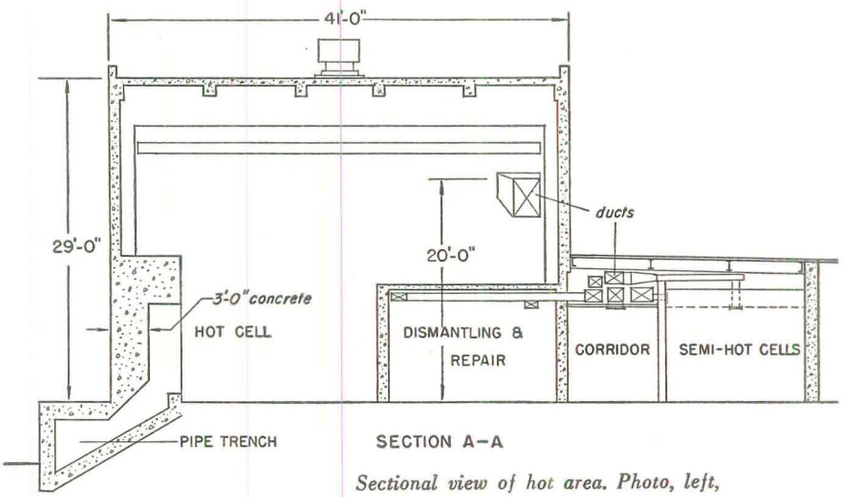
1. Creating flexible, efficient work areas for a wide range of engineering and other research in chemistry, physics, biology, medicine and related sciences—some involving hazardous materials handled by remote control.
2. Providing shielding to protect personnel.
3. Preventing radioactive contamination of equipment, the structure and the neighborhood.



Exterior photograph of hot lab has approximate orientation of plan below with cold area at left, hot at right. Plan, below, shows how interrelated functions are grouped together. Entrance, conference room and few offices are on partially excavated ground floor.







Sectional view of hot area. Photo, left, shows far hot cell in operation. Both doors of near cell are open and cut-out areas can be seen in steel plate that permit doors to close tightly around panel section.

Floor plan segregates hot from cold activities

To accomplish these objectives the planning team (led by Louis Stang, Gerald Strickland, W. E. Winsche and Brookhaven's architectural unit plus Ferguson's capable staff) decided on the floor plan shown above. The basic concept was to separate cold from hot activities, and keep cross traffic in personnel and equipment to a minimum.

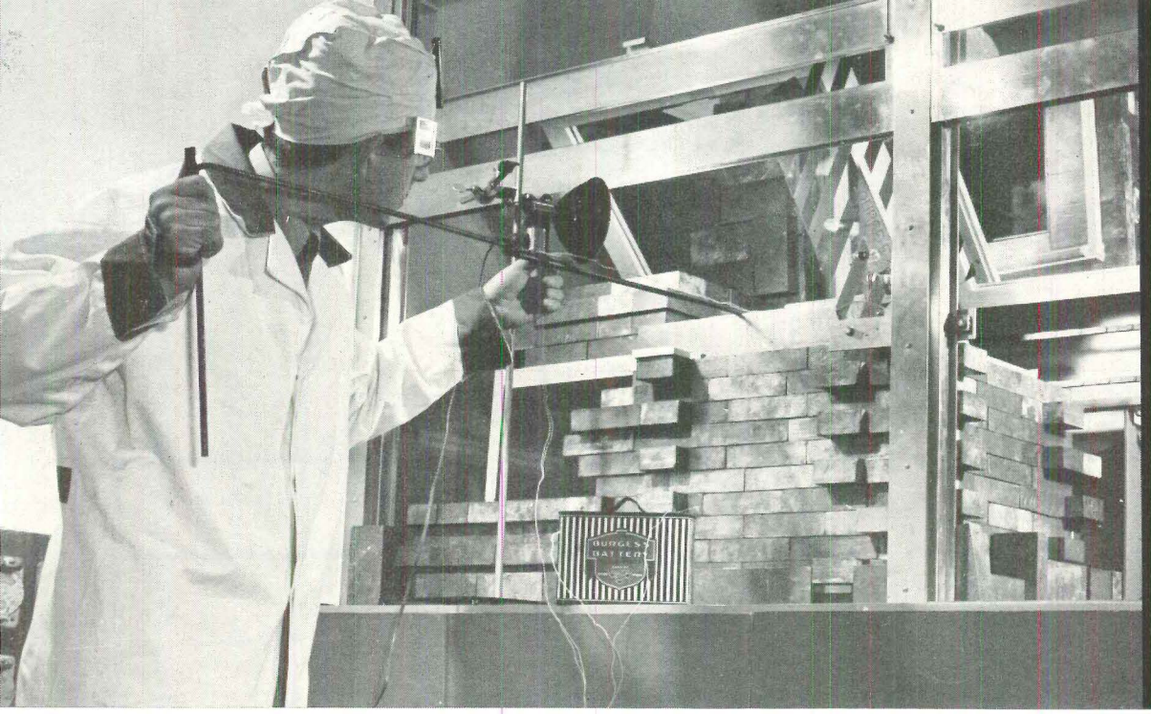
The cold area is divided to provide several services for the hot area: The building, assembling and testing of elaborate equipment used in hot cells; providing tool rooms, storage and special-purpose rooms; and double locker rooms for both men and women (street and work clothes are kept separate).

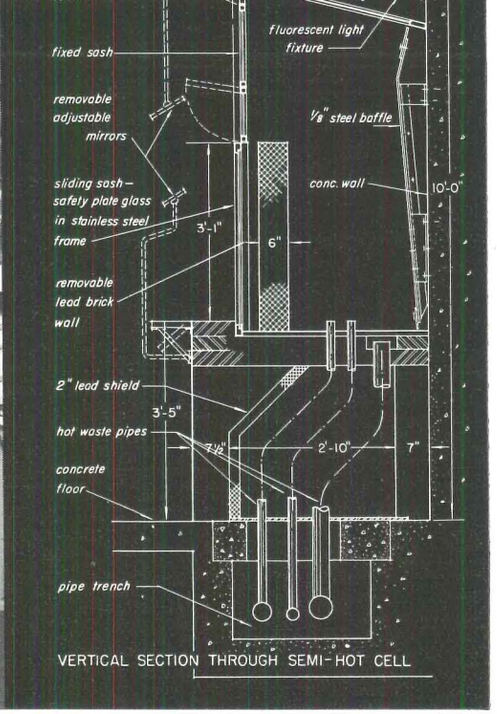
In addition there is space for laboratories, physical measurement, counting (to tabulate radioactivity in specimens), health physics (to keep a check on workers' exposure to radiation) and a sort of "decompression chamber" which workers must pass through when going from hot to cold zones where they get monitored for radioactivity. Down the center of the cold area is an unobstructed 8′ corridor, wide enough for a lift truck.

The hot area has facilities for several kinds of experimentation: the hottest of all, done in hot cells; work with less active materials, done in the semi-hot cells; and a variety of experimentation and processing done in the "semi-works" area where large equipment can be set up and where Brookhaven processes isotopes used in hospitals, colleges and other labs. The balance of the hot area is largely devoted to servicing space such as storage, disassembly, and decontamination.

Construction materials and methods

One of the principal differences between this laboratory and others is in the weight of its structure. Foundations, columns, floors, roof and much of the exterior walls are of reinforced concrete. Exterior is of brick. Partitions and pier facing are





Semi-hot cell, with scientist using tongs and mirror to work behind lead bricks. Cap badge and cylinder measure radioactivity he receives.

of terra cotta block. The building rests on deep concrete piers that in turn rest on heavy concrete pads. Subsoil is all sand.

Many interior partitions also are of unusual thickness because they serve as shielding. Partitions between the semi-hot cells, for example, are 6″ of steel. All the floor area in the hot area is heavy enough to support great loads. Portions where additional hot cells may some day be built are 3′ thick. One section of flooring over the waste treatment tanks is 4′ thick of movable blocks that can be taken up if there is need to remove tanks or other equipment.



Interior design of the building was considerably influenced by the fact that cleanliness was more important than in a hospital. Dust and dirt are dangerous because they become contaminated and carry radioactivity. Consequently the planning team representing Brookhaven emphasized there should be no dust traps such as shelves, horizontal tops on equipment or unnecessary projections. All walls are smooth and without cracks. The utility pipes (water, compressed air, gas etc.) mounted high on one wall in the hot area are covered with a removable sheet metal panel that has a sloping top.

Walls and ceilings are covered with an acid-resistant paint that can easily be washed. On the floor is a plastic tile laid on mastic, both acid-resistant. Materials are inevitably spilled, and when this happens the tile will stop some and it is hoped the mastic will stop the rest. If contaminated liquids get through the mastic, the cement must be chipped out and replaced, a process that in itself spreads contamination.

Inside the hot cells a stainless steel lining is covered with a blue paint that can be stripped off. Normally the cells are washed down after they are used and this is sufficient to keep them uncontaminated, but the paint can be stripped off as special precaution when necessary.

Construction in the cold area tends to be more nearly like an industrial laboratory, although there are some unusual features. A bench in the physical measurement room is supported on two columns that are isolated from the building foundation to eliminate vibration. The walls, floor and ceiling of the counting room are of 2′ concrete, making this a vault. In the analytical laboratory the floor tile has been sprayed with a cocoon plastic as an experiment to reduce chances of contamination if material is spilled on the floor. Similar cocoon has also been sprayed in the hot section to cover exposed pipe or other dust catchers.

Waste piping and plumbing system

Another principal reason the design and construction is unique is because of the complex piping system used to carry off contaminated waste. The network of pipes and tanks is so great that the complete system, inside and outside the building, cost over $500,000. Most of it is stainless steel.

Water is used to carry away contamination, whether in the form of emergency showers that a man can quickly jump under if he spills acid on himself, the washing down given to hot cells, scrubbing of contaminated glassware or the constant washing of floors.

All wastes that may be contaminated are automatically checked for radioactivity, and if active are put through an elaborate "delousing" process.

A visitor might well believe that two kinds of waste systems would be sufficient: hot and cold. But there are actually five:

1. Hot, containing uranium or other materials for which Brookhaven is accountable to AEC.
2. Hot but not accountable.
3. Hydrochloric acid or solvents.
4. Liquids containing only slight activity.
5. Inactive, as from floor drains in cold area.

Some of these are so corrosive, such as hydrochloric acid, they must be carried inside a plastic lining which in turn is inside a stainless steel conduit. There are automatic counters for even the normally inactive wastes to make sure that no untoward accident has happened.

There are so many lines for carrying water or wastes that it was necessary to build five trenches across the floor of the hot area. These are pitched for natural drainage, are painted with several coats of acid-resistant paint, and have removable concrete slab covers. The tile floor, however, covers the trenches and would have to be taken up for access to the trenches.

Waste from the hot cells is carried out through five drainage

lines located in a pipe trench. All drainage lines from the hot area feed into a series of tanks located in three basement tank rooms. Each kind of waste is segregated and active wastes are allowed to cool off in hold-up tanks.

The contents of the different tanks can be measured for radioactivity from a central control room (see photograph) where an operator can shift liquid from tank to tank, dispose of it, or pump it out to a tank farm 250 yds. away from the building. When liquids have lost enough of their activity to be safe they are pumped into the sewage system. This is not done until activity is a fraction of that found in many streams that pick up low-activity from rocks and other natural materials.

The drainage system at Brookhaven's hot lab is one of the most elaborate of any atomic center, as most other labs are able to discharge wastes into large streams. While such laboratories do considerable processing of wastes, they have a less difficult technical problem than does Brookhaven.

Ventilating and air conditioning

Air circulation is as important in its way in keeping the building a safe, efficient place to work as is the liquid drainage system. Ventilation serves as a carefully controlled flushing and cleaning system that brings in outside air, filters it, conditions it if necessary and pumps it through a variety of zones and then again filters it, scrubs it if necessary and disperses it to the atmosphere.

There are three basic rules that govern air flow:

1. Air movement is always from cold areas to hot areas.
2. Air is used only once and is never recirculated.
3. The building is zoned according to the amount of radioactivity involved and air from contaminated areas is given special handling that makes it clean and safe to exhaust to the atmosphere.

In the cold area most space is ventilated with filtered outside air which is not conditioned. Approximately 20,000 cfm is supplied that ventilates locker rooms, toilets, mechanical equipment and other rooms. Most of this air is exhausted through the roof.

Four rooms in the cold area receive conditioned air. Three systems serve these rooms. One delivers 1,350 cfm to the physical measurement room and the counting room together and this air is exhausted into the corridor as it is not contaminated.

The second system delivers 3,600 cfm, equally divided between the analytical laboratory and the solution makeup laboratory. This system is called the Lab Constant Supply and provides enough air to take care of each room when one or two of the four hoods are operating. However, when three or four hoods are operating in either laboratory, the third system (called the Lab Variable Supply) automatically begins operation which can furnish up to an additional 1,800 cfm to each room. Vortex dampers in the supply ducts control the air volume. Two units totaling 57 tons provide the cooling.

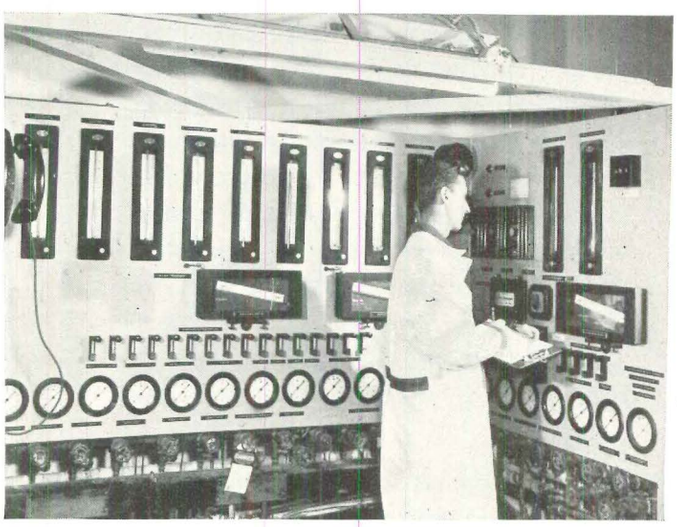
More air is exhausted than is supplied so that a small amount of air is always being drawn in from the corridors to insure an air flow into the laboratories. The very small amount of radioactive materials that might be in the exhaust air is taken out by Chemical Warfare Service filters and air is exhausted through the roof.

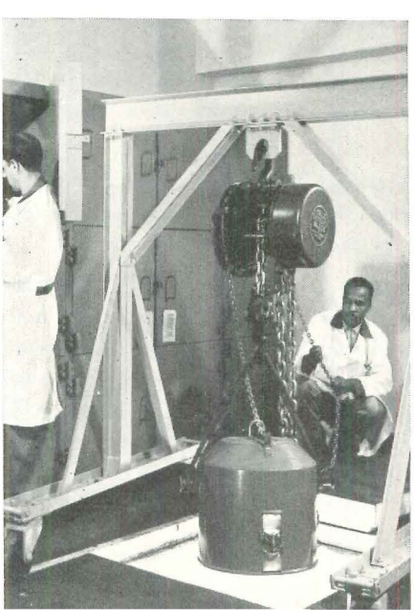
The cold area of the building is always being supplied with more air than is exhausted. There is nearly 5,000 cfm that is moving from the cold half of the building to the hot areas. Air moves from cold to hot zones if doors are open, and when all doors are closed (as is usually the case) air moves through two grilles over the center door.

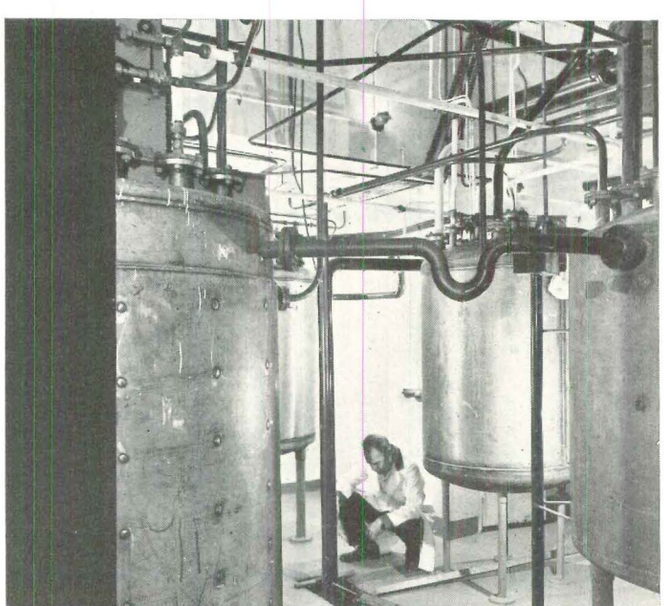
While the air in the 25′ high hot area does not normally contain radioactive materials in amounts dangerous to personnel, engineers who designed the air conditioning system wanted a safety factor. They did three things to make sure that there would always be an air movement from cold areas to hot areas, and a constant air movement out of the hot zone.

The first has been mentioned: supplying more air to the cold area than is exhausted. The second was the reverse: exhausting more air from the hot area than is supplied. The third was to provide a form of "safety valve" by installing

(Continued on page 206)

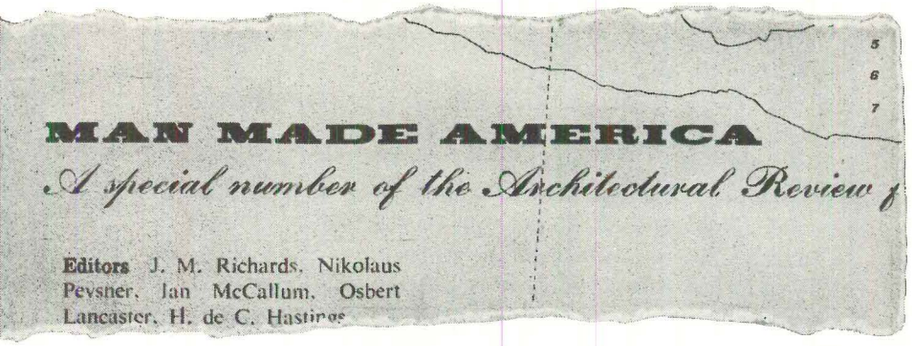






Left: Lowering lead container into hot storage well. Heavy steel lockers are at left. Upper right: control room for monitoring and pumping waste liquids for entire hot lab. Lower right: one of three tank rooms in waste treatment area below main floor.

A reply to:



For some years the more recondite among U. S. architects had been quietly enjoying their subscriptions to the ARCHITECTURAL REVIEW *of London. Its attitude was civilized and its view world-wide. But late January these doting Americans received a heavy jolt. The* REVIEW *had set forth on the warpath directly against them; its special December issue had been intended, so the* REVIEW *said, "to investigate the mess that is America, to attempt to discover why it has happened, and what, if anything, is to be done about it."*

From there on out these stunned U. S. readers were to experience how an innocent savage feels when set upon by an outraged and consecrated missionary.

But the ultimate outcome was the realization that the art of creating a visually decent America calls for a new declaration of independence, a fresh use of uniquely American dynamics.

RARELY had a cultural publication, published in a friendly country, issued so wholesale a condemnation of American civilization as appeared in the *Architectural Review* of London.

Said the *Review*, "The picture that a nation creates of itself out of, and upon, its landscape is a more realistic self-portrait than any of us like to admit." As for the picture of the U. S., "never before in ten thousand years has Western man . . . created the kind of squalor we are talking about here—the hygienic but visually scrofulous wasteland which in the U. S. is the universal embodiment of Progress, twentieth century style. . . ."

"Is there in any real sense," asked the *Review*, "an American scene, an American landscape, even an American dream of an American scene?" Its answer, no; the art was nonexistent. "It will take well into the twenty-first century, perhaps, for our brothers-in-dirt to make over the whole of their superb inheritance into a combination automobile graveyard, industrial no-man's-land and Usonian Idiot's Delight."

Thus spake the *Review*, implementing its attack with captive U. S. artillery in the form of Walker Evans photographs of scrawny Main Streets, Steinberg's inimitable cartoons of New York's most ridiculous pretensions, and other too-revealing indictments of America at her silly worst.

But little did the editors of the *Review* realize, as they sat back to await the returns, how different would be the impact of their blast, upon thoughtful Americans, from the impact they had intended. Setting forth to demonstrate that the U. S. needs above all else a new wave of European influence (to carry it beyond materialism) the *Review* ended by demonstrating the inadequacy to the occasion of both the insular scale and the Old-World tempo.

These thoughtful Americans were unreservedly thankful for the sharp reminder, from an outside source, that *some* of the "mess" is really there. ("Let's be frank and admit that this country of ours is supremely ugly in its human setting as a whole," had written a U. S. author two years ago in the AIA *Journal*; "we are building a tin-can civilization," had declared AIA President Ralph Walker to every gathering of U. S. architects he could reach.) Moreover it was useful to be able to point out, to certain segments of the U. S. business community (for example to the automobile industry) that ruthless practicality without regard to side-consequences, although it had done much to build a gangling young Republic into a force to contend with, must create "bad public relations," to say the least, for a country which has almost unwittingly become a world power, and which must make its bid not through wealth, and certainly not through bullying, but in the end through the silent appeal, to a world bigger than itself, of a flowering civilization.

Yet this was about the extent of the contribution. For there were not only bad flaws, there was a basic and highly significant miscomprehension, in the *Review's* prognosis.

The flaws could be dismissed as only natural. The *Review* was after all building up the pride of its domestic readers rather more than it was seeking U. S. betterment. Hence its strange choice of Europe-rooted authors. "Th' further ye can get away fr'm anny peeryod th' betther ye can write about it," said Mr. Dooley—"ye are not subject to interruptions be people that were there." So it was probably in the cards that strong popular movements in the U. S., especially in house

building, should be dismissed as *Heimatstil* whilst cognate developments in cozy Switzerland or in compact pretty Sweden had been hailed in the *Review* as the "new empiricism." It was perhaps to be expected that the editors should ignore the existence not only of Frank Lloyd Wright's passion but what was much more important, the roots of that passion in the America of Walt Whitman.

Other faults were more serious. Had writer Weisman (also an expert on Medieval Manuscript Painting) been more cosmically oriented, he could not have sneered at Rockefeller Center as "fourteen buildings tied together by a dollar sign": he would have noted how economic forces were there socialized and turned civic; he could not have missed the great scale at which formal concepts were realized which Le Corbusier had as yet been unable to lift off paper in Europe; and beyond that he would have observed, in a new context and for new purposes, recurrence of an old medieval *method*. Over slow centuries the cathedrals had grown by meeting change with change; here in a swift decade it was proved that this method, the only one open to us, could result again in a strong rhythm and not incoherence. No thoughtful American accepts Rockefeller Center as an ultimate; but to throw away potential so magnificent and allow it to be lost through sheer nonrecognition is not a contribution of the creative spirit.

This one example would have to stand, in a quick note, for the general tendency of the *Review*'s authors to vitiate their observation and stultify their thinking by close confinement within case-hardened European concepts.

Whatever else the *Review's* exposition did, it forced the American who was concerned about his surroundings to think about his Continent in its most basic relationships. To be sure America is and has been rooted in "the West" but America has been a torpedo-head. Its scale and tempo both lie outside European experience. In Europe even the era of science and industry fell upon a "settled" civilization. America has by contrast been first, last, and always the continent of a *persistent high velocity of change*, matched nowhere except perhaps in some ways in modern Russia.* These rates are easy to forget.

An American baby born in 1790 would have belonged to a coastal agricultural country reaching west no farther than the Alleghanies. (Remember, editor Richards?) By the time he was 13 his country would have reached to the Mississippi. By the time he was 55 it would have incorporated California. Within one brief lifetime a whole continent embracing 3 million square miles (plus 3.7 million square miles in Canada) would have received its first pattern of modern habitation. If that man died in 1850 at the age of 60, another baby born the year of his death might easily have lived into the 20th century. At the age of 24 this second man would have witnessed the completion of the first transcontinental railroad; and already the collisions of industrial change would have caused weeds to choke the walkways of the canals. By the time he was mature at 45, a steel technology would have been pushing up the first skyscrapers of big cities. If he died in 1910, the automobile would already have been well under way, destined to collide head-on with the age of steam, to alter the complete map of population growth, blight many of the most imposing centralized city areas, create a highway system of three million miles with 35 million individually controlled vehicles moving on it, and deeply affect the social habits of a nation which today counts 160 million people. For the population of the U. S. in the century and a half since 1790—less than three life expectancies laid end to end—had grown not 41% but *41 times.*

These differences in *rate*—along with countless others left unnoted—multiply themselves into a problem different in *kind*. America is the product of a three-fold jet propulsion. No European country shares the experience of having settled an empty Continent at the very moment of a tremendous population expansion. No European country had its birth at the precise moment of greatest force in the scientific-industrial revolution, in a territory of such boundless resources. (Between English industry and American there is a total difference of rhythm, between a steady settled pulse and a flaring racing surge of action.) No European country was born of the concurrent release of the energy and self-steering initiative of the common people. Might one not expect a man breaking in a wild bronco to spoil more grass than one hacking the ring on a well-trained riding horse?

Both of them parts of the West, America and Europe should stand in a synergetic relation. But the *Review* had proved the inadequacy of sermons couched in European cliché thinking. In the past, intelligent Americans have sought hard for betterment through French ideas of the City Beautiful, English ideas of the Garden City, German ideas of Master Planning: none of them have served us as more than shreds and patches. It is perhaps time to think harder about those elements of American experience *not* covered by Europe. The first of these is the *persistence of a high velocity of change*. Architecture, planning, and building, should be soaked in a consciousness of the implications. In the realm of *pattern* we must be wary of precisely the best articulated and most elegantly polished European solutions—they can be ridiculous at our big scale, and are subject to the quickest obsolescense. We must dig into the almost untouched wealth—visual wealth—of indigenous devices such as the despised gridiron system; it has the homely virtue of Billson, the friend of Artemus Ward, who could "balance in any direkshun" facing the certainty that the future was uncertain. Our art must favor every invention that permits us to rest lightly on the earth, and *still* not be ramshackle.

Not a denizen of the ivory tower, this publication is alert for those fulcrum points where constructive improvement can perform a quick ju-jitsu. Against the howls of professional dilettantes, it has pressed a major campaign to obtain a suffusion of architectural skill in the great broad realm of merchant building. There has been no hesitation about showing pictures of dirty slums if this furthered great community movements for city-center redevelopment (page 128). Since 1945 England has been slowly starting a series of well considered "new towns." The U. S. can be glad for its lessons; but our technicians must devise means for keeping decent a whole series of new communities which must be occupied by 1952 though they are not yet started. (Page 122.)

Some final question remains as to what *is* ugly? There are great reservoirs of vitality even in honky-tonk. Democracy has her victories. To paraphrase Whitman, *the gross and the soil'd she moves among need not make her gross and soil'd . . . she is none the less considerate or friendly therefore.*

* The *Review* has been extremely polite to architectural desuetude in Russia.

Hedrich-Blessing Studio

Southernmost classroom wing (above) is two stories high, but second story has access to grounds on the north. Main entrance (below) shows auditorium for 600 at left, cafeteria underneath.

Gabriel Benzur



BETTER SCHOOL FOR THE SOUTH

Handsome concrete frame building points the way

LOCATION: Atlanta, Ga.
STEVENS & WILKINSON, Architects
BRITTAIN & PATTILLO CO., General Contractors

In the nation-wide fight for better schools, the E. Rivers School in Atlanta's carriage-trade residential district out on Peachtree Road has made two specific and important contributions: First, it proved that the well-known school-building ingredients—concrete, brick, glass block and a standard "finger" plan—can be combined in a fine piece of architecture; secondly, it broke down widespread local prejudice against modern design when its architects built their well-finished school (the first modern one in the county) at less than the average unit cost, demonstrated to other conservative Southern communities that modern schools can be cheerful, handsome—and inexpensive.

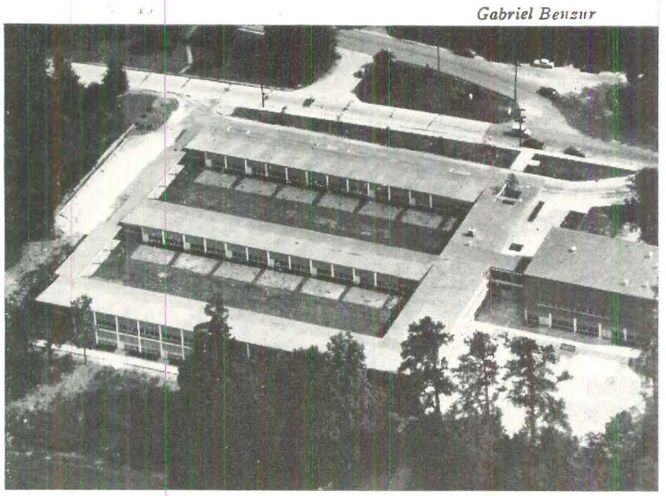
A fine curtain wall

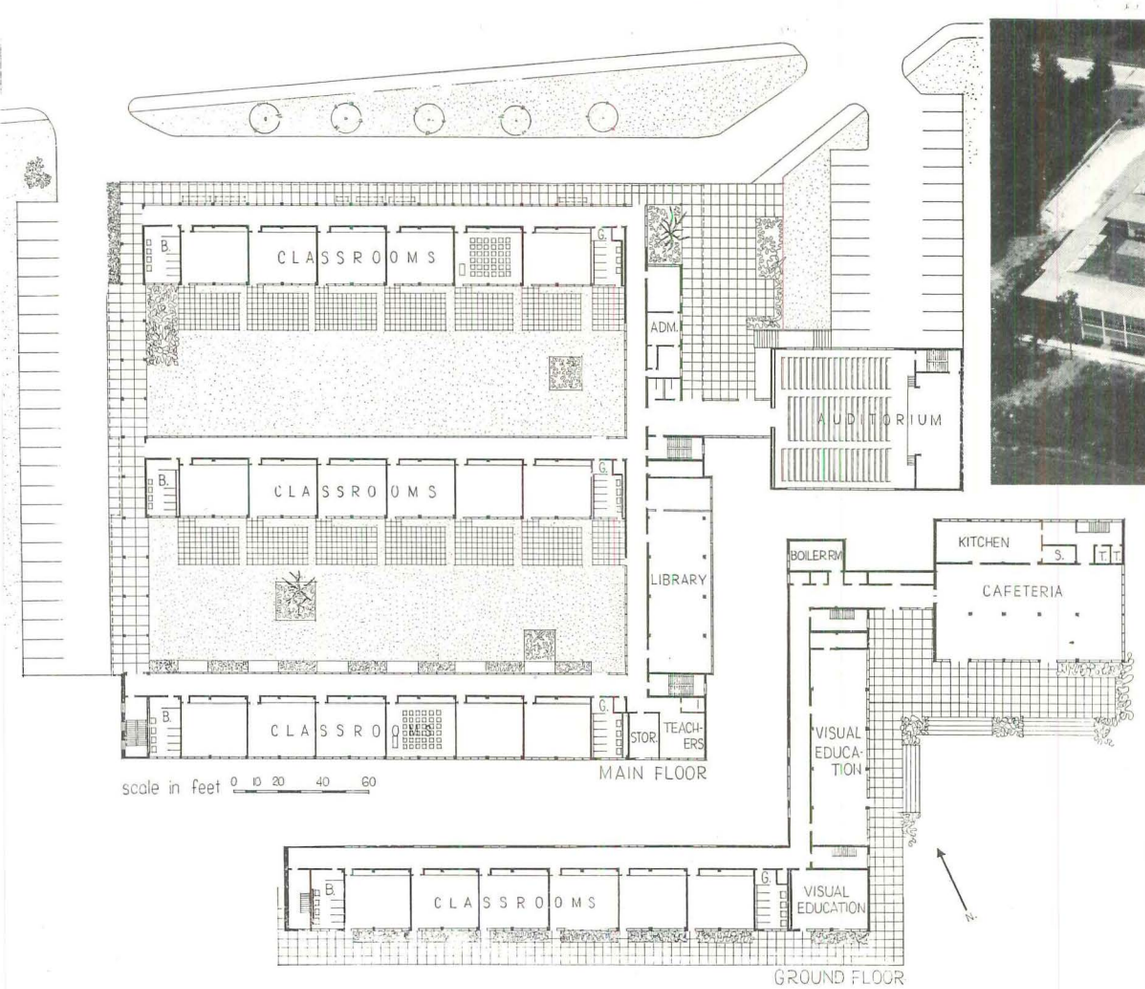
With thousands of modern classrooms still desperately needed in all sections of the U. S., many Boards of Education have been stressing practical sobriety in their new buildings and neglecting higher standards of modern architectural design; it is a pleasure, therefore, to see architects Stevens & Wilkinson give their school that extra finish and sensitivity that produces good architecture, rather than merely good building. There are plenty of school architects and school executives who might well take a closer look at this job.

Two major design flaws spoiled many a brick-and-glass-block facade in the past: First, there was rarely a clear distinction between what was structural and what was not. Frequently the bands of glass block would look as if they were holding up bands of brickwork—or even the roof itself. The result was visually disturbing and logically ridiculous. Secondly, brick-and-glass-block facades invariably ran into confusion, since the brick-and-glass units were just about alike in scale and size—but just different enough to create unfortunate and distracting patterns.

Stevens & Wilkinson solved both problems in a simple manner: They let the concrete structure speak more forcefully than the curtain-wall, articulated their building with a repetitive and well-proportioned concrete cage. This immediately did two things: First, it left no doubt as to what was holding up the building and made it obvious that the glass block, brick and clear glass panels were nonbearing curtain walls. And, secondly, by letting the exposed concrete frame establish the dominant facade pattern, the architects set the scale for the

Gabriel Benzur





entire building, made it strong enough to overpower the much smaller "mosaic" of glass block, brick and window sash.

Some questions of climate control

All this adds up to a distinguished job of architectural detailing; but there are some peculiarities in the functional use of the glass block that are bound to create discussion. For example, the architects relied so heavily upon the diffusing qualities of the block that they threw away a free chance of getting bi-lateral lighting. Without changing their structure (see section), they could have included a strip of transoms to borrow diffused light from their single-loaded corridors.

Such transoms would have come in handy for cross-ventilation as well (in place of the occasional vents provided by the architects). Although the insulating qualities of the glass block considerably reduce heating costs during the winter months, Fulton County's superintendent—who is enthusiastic about the E. Rivers* School—admits that the glass block on the south facades "does radiate rather extreme heat during the warm season." Opinions differ on whether such radiation is anywhere near the solar heat gained through clear glass; but, in any event, this situation might have been improved with cross-ventilation through each entire classroom wing.

Low cost luxury

These criticisms do not detract from the impressive detailing employed in the design of each structural bay. That detailing is largely responsible for the low unit cost achieved in the E. Rivers School: At $8.82 per sq. ft., Stevens & Wilkinson beat the current Fulton County average of $9.30 by a comfortable margin, nearly halved Atlanta's city school average of $12 to $14 (which takes in well-built, well equipped Negro schools as well). Yet E. Rivers is an expensively finished school by any standards, employs an open plan with long, expensive peripheral walls. Stevens & Wilkinson say that a lot of the credit should go to the engineers in their office who standardized structural details, facilitated multi-use of concrete forms and cut material and labor costs wherever possible. Some added savings were achieved because the local school department does all of its own painting and furnished lighting fixtures and other costly equipment.

"We thought we'd get an awful lot of criticism from local people," say the architects. "We thought they expected Greek columns. Well, they're just crazy about the school. They won't say if they like the outside, but they think it's wonderful on the inside." The reason is not only that E. Rivers turned out to be so cheap (even at low, Southern building costs, which are as much as 33% below those in the North). The neighbors also like E. Rivers' cheerful, cherry-red brick, its gray steel windows outlined with canary yellow ("It gives you a lift, keeps you from thinking you're looking out through a jail-house," says architect Wilkinson). They like the way the architects used an irregular site to give second-story classrooms direct access to the surrounding grounds. And they like the auditorium best of all, because it is detached in a separate wing to serve community functions without letting them interfere with the rest of the school. Said the Atlanta *Constitution:* "Not a gargoyle in sight. . . . The end of the peanut butter sandwich era!"

Admittedly, E. Rivers' 900 children are going to be crowded in their 24 classrooms, with 38 or more children per room. Fulton County's progressive school superintendent recognizes this, plans to relieve the pressure by using some of the playroom areas for class purposes until he can build more schools. When that time comes, they will be as modern as E. Rivers.

* The school is named for a prominent Atlanta citizen.



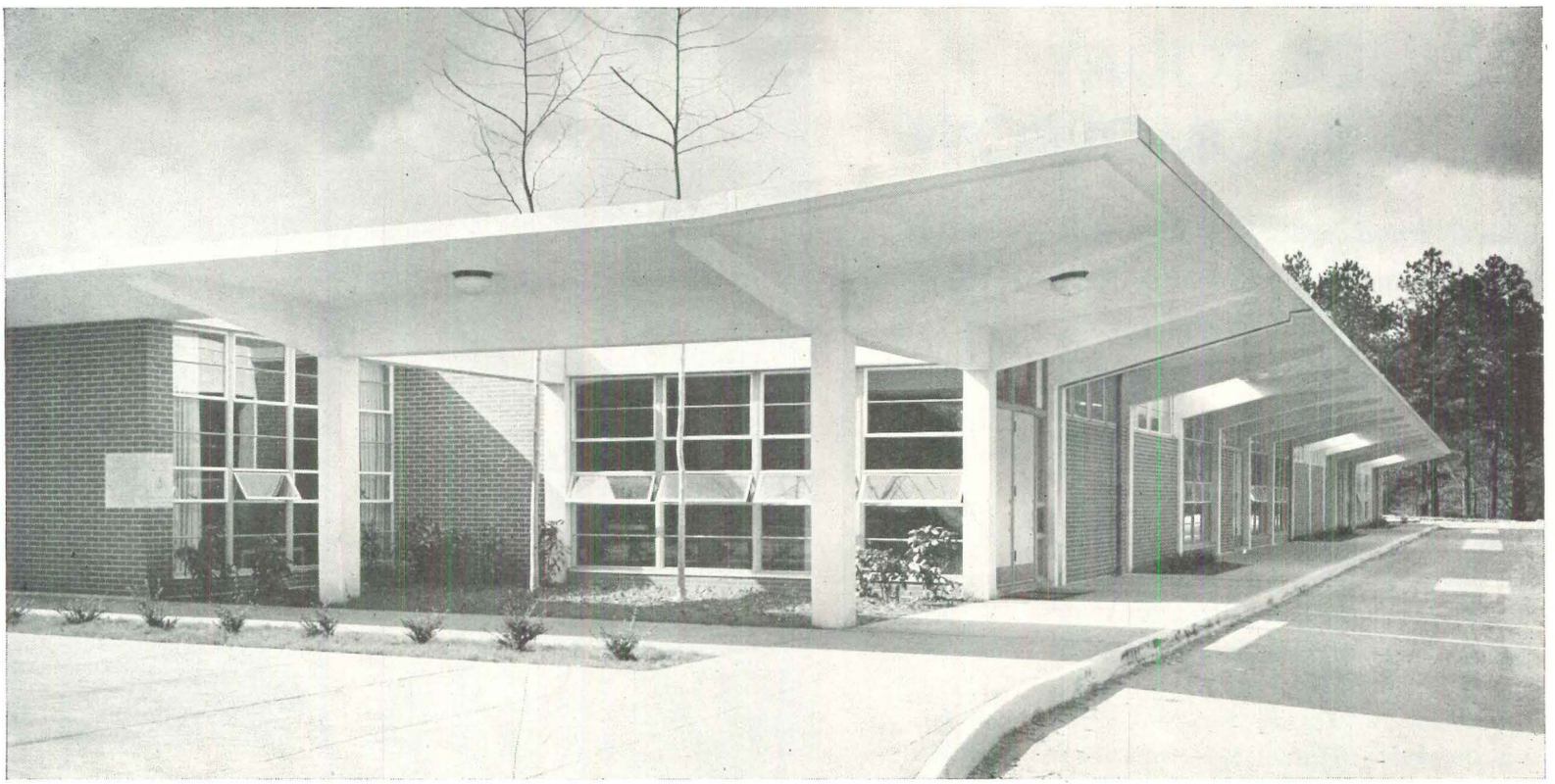
Hedrich-Blessing Studio

Upstairs library is framed and cantilevered out over ground floor playrooms and visual education facilities.

Library interior shows exposed concrete frame, cherry-red brick wall in rear

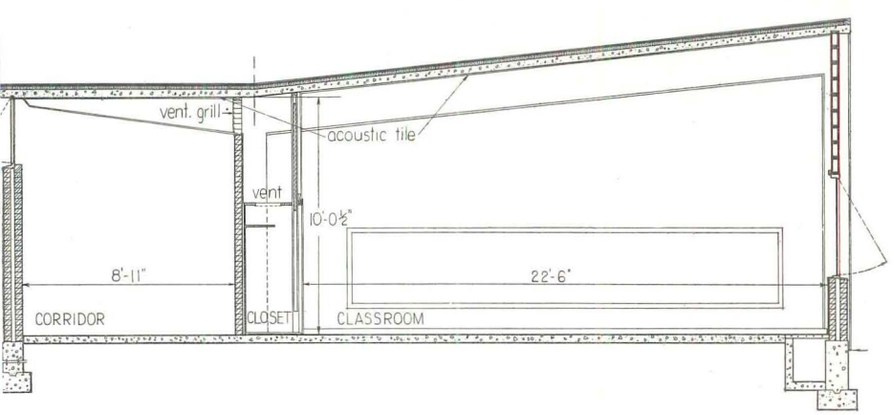
Gabriel Benzur



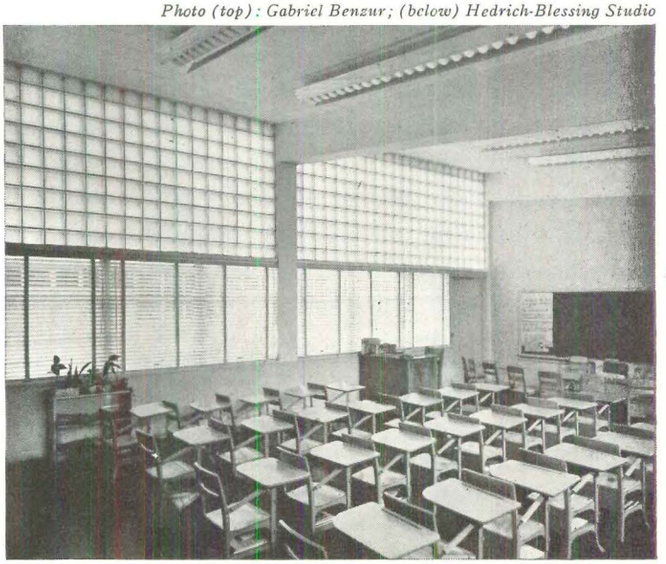


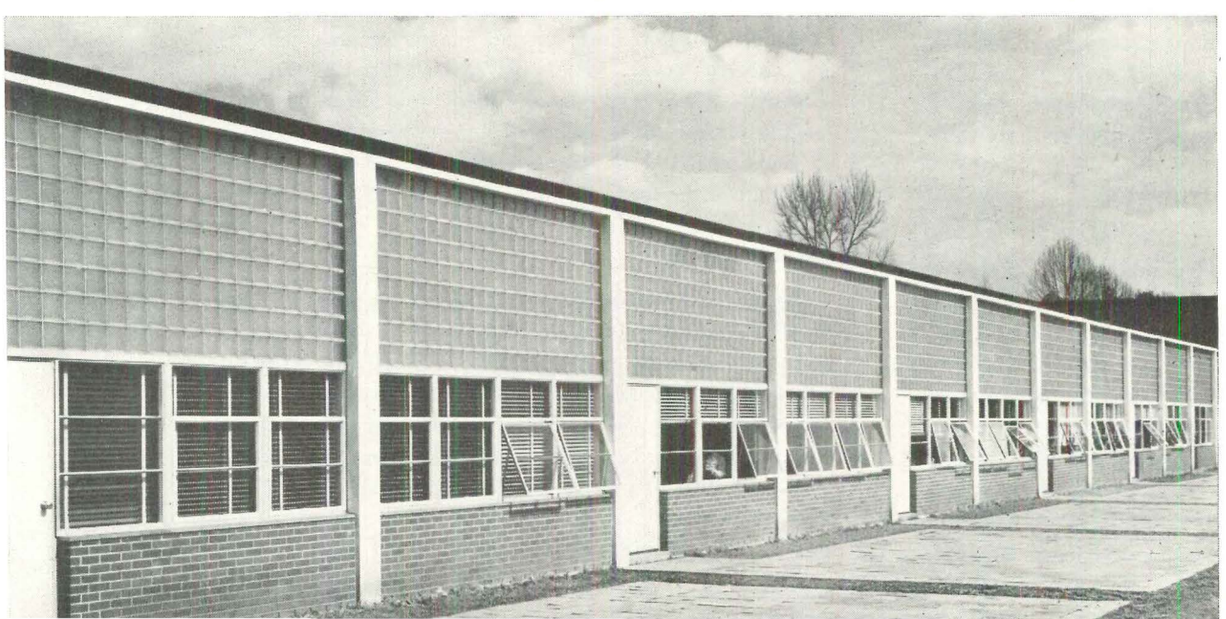
Parents who drop off their children by car use sheltered "loading platform" above

Photo (top): Gabriel Benzur; (below) Hedrich-Blessing Studio



Section through typical classroom explains cantilevered corridor roof, shows that classrooms might have had bilateral lighting through corridor.





Typical classroom interior (above) has Venetian blinds to cut out glare and direct sunlight. View at left shows one-story classroom block. Some school planners prefer exterior "eyebrow" sunshades to Venetian blinds that obscure vision strips.

SCHOOL TODAY STORES TOMORROW

Steel-framed school proves cheaper than wood frame, has provisions for future conversion as population shifts

LOCATION: Pearl River, N. Y.
CHURCHILL-FULMER ASSOCIATES, Architects
FRED L. HOLT, General Contractor

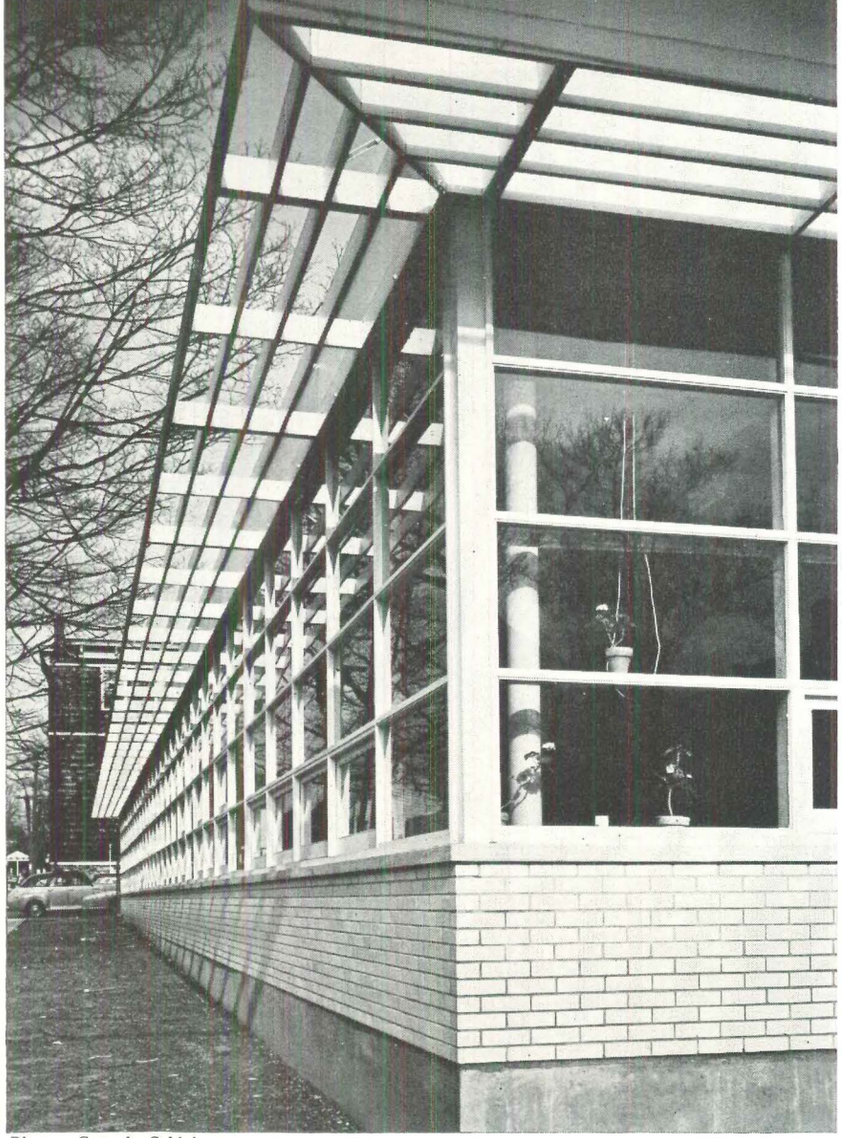
There is much more to this unpretentious and clean-cut elementary school than meets the eye. In fact, this experiment in Pearl River, N. Y. (Pop.: 7,400) suggests a major revolution in American school design and school construction.

Here are two reasons for thinking so: First, this is a completely fireproof, steel-framed school that was demonstrably cheaper than an equivalent nonfireproof, wood frame building. (In fact, according to New York's Moore Committee, Pearl River is the cheapest new school in the State.) And, secondly, this is a completely convertible school—it was designed to be turned some day into a two-story building with stores at street level, apartments above. The reasoning behind this unusual project is extremely sound: Towns grow, people move farther out and want to take their schools with them. Pearl River's solution: Sell the old school for commercial purposes, build a new one where and when it is needed.

When architects Churchill & Fulmer tell incredulous colleagues that their steel building proved to be cheaper than a nonfireproof job, they also like to add, parenthetically, that this was achieved despite the $4,000 spent for extra steel to hold up the projected upstairs apartments. Even so their total cost for the 100% fireproof, radiantly heated, fully equipped building for 250-300 children was only $9.10 per sq. ft., 64 cents per cu. ft. The secret: Complete trade separation during construction, meticulous planning and organization of all phases of the job, close design consultation with builders and contractors on all details employed. Result: Pearl River's first pupils sat down at their desks only four months after ground was broken!

Cheap steel

Many factors made Churchill-Fulmer's steel structure cheaper than a nonfireproof job: At the start, only the footing for each pipe column was poured; next, the steel went up in double time, and Durisol panels filled in the roof frame; after that, all trades could work under cover, and grade beams and slabs were poured without interference from the weather. Window sash units were made up of wood (which proved cheaper—but door bucks were found to be more economical in steel); exposed steel beams were clad in sliced Durisol strips; hollow masonry walls (of 4″ face brick, 2″ air space and 4″ painted concrete block inside) were laid up outside the steel frame, left lally columns free-standing and wood window mullions equally free to receive 4″ nonbearing block partitions. The latter can be knocked out at will when the classrooms are converted into stores.



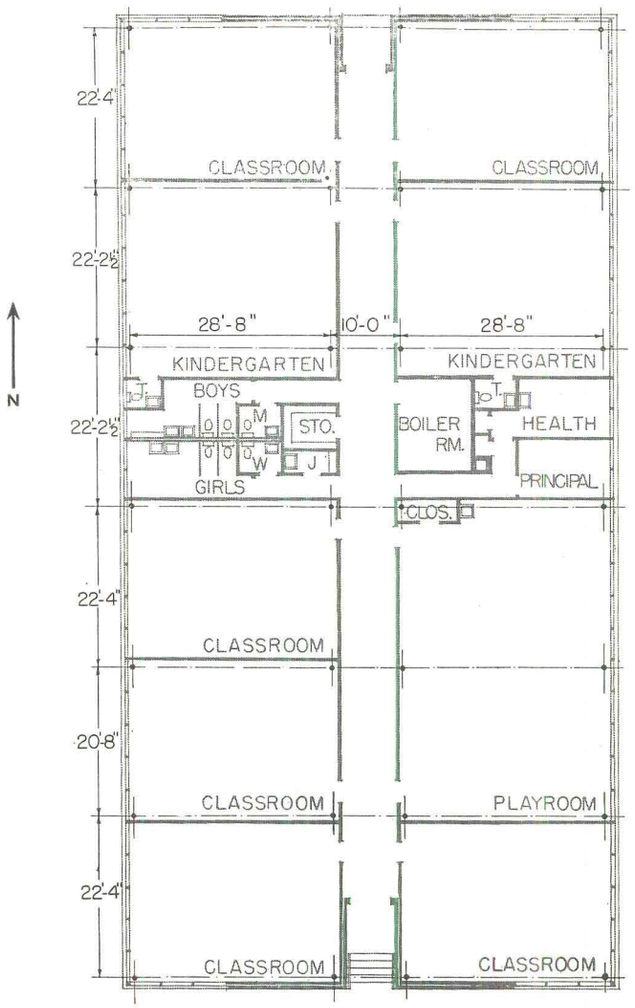
Photos: Gottscho-Schleisner

View from south shows louvered sunshades suspended with metal rods

When the Public Education Association recently asked teachers to describe their dream school, they came up with many features incorporated at Pearl River. Among them: hot and cold water in every room, low window sills, plenty of light with glare-controls (Pearl River's louvered overhangs cut out sky glare for top quarter of strip windows) and cheerful colors (Pearl River has five different basic schemes). They might have added "low insurance rates," for Churchill-Fulmer managed to cut these from the usual 32 cents per $100 to a mere 8 cents—all because their steel frame made the building four times more fire-resistant.

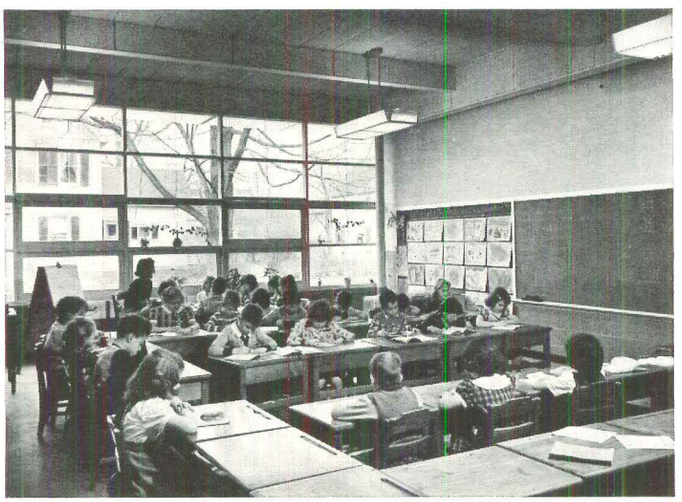
Flexible cubage

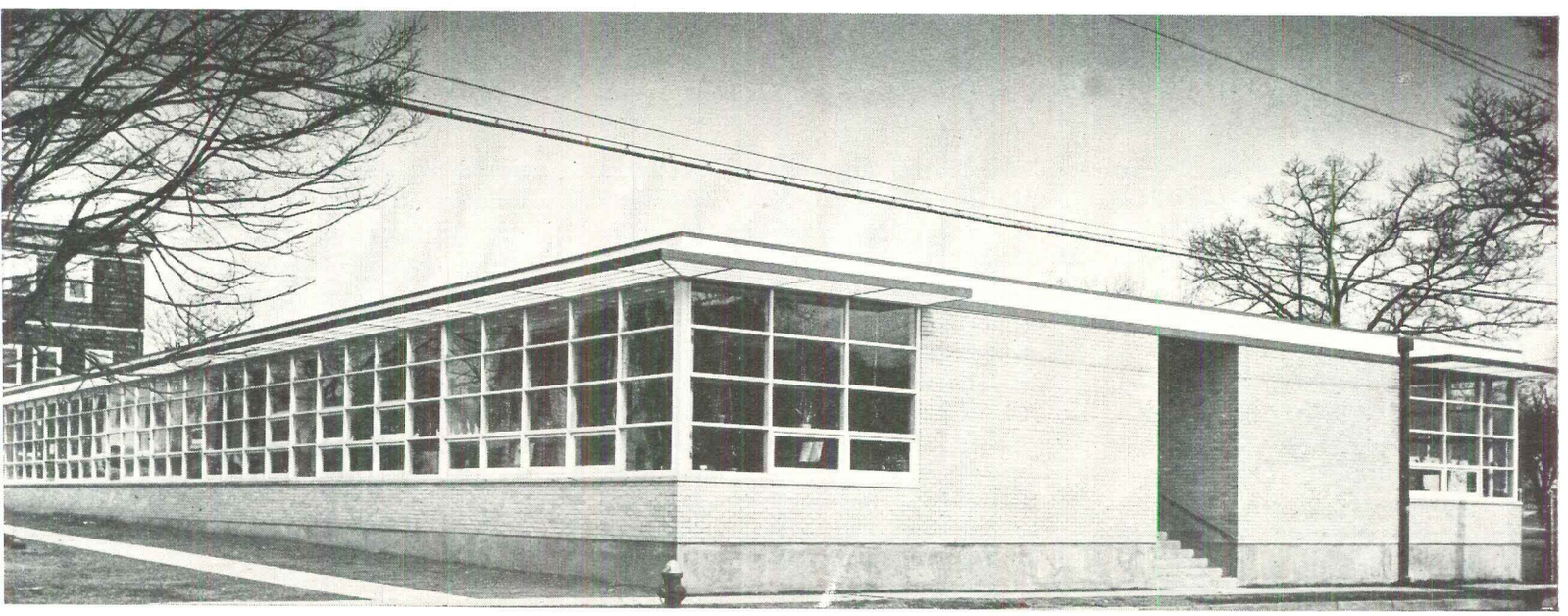
But more important than any of these economies is Churchill-Fulmer's demonstration of one of the pet theories currently advanced by school planners: The theory of flexible school space that can be turned to other uses when population shifts occur. When THE MAGAZINE OF BUILDING published its *School Issue* in Oct. '49, the editors asked whether schools "could not be so designed as to be convertible to office or industrial use without loss." The answer, as given here in Pearl River, is clearly: "Yes."





Playroom is two bays wide. Steel framing was covered with sliced Durisol panels. Flanges of I-beams were left exposed. Typical classroom below.





Cost comparison of roofs: nonfireproof wood and fireproof steel framing with Durisol

Type of roof system	Base price per sq. ft. installed	Gen. contr's overhead & profit @ 15%	Gen. contr's insur. & S. S. @ 10%	Estimated total cost per sq. ft.
Wood joists & sheathing				
1" wood sheathing (T & G)	.18	.027	.018	.22½
1" rigid insulation	.16*	.024	—	.18½
½" gypsum wallbd. (taped)	.10	.015	.010	.12½
2"x12" wd. joists 16" o.c. (17'-6" span)	.40	.060	.040	.50
Steel beams 3,038 lbs. per bay @ .15¢ lb.	.29*	.044	—	.33½
Totals	1.13	.170	.068	$1.37
4¼" Durisol roof plank				
7'-9½" length (2 reinf. rods)	.56*	.084	—	.64½
Steel beams 4,383 lbs. per bay @ .15¢ lb.	.41½*	.062	—	.47½
Totals	.97½	.146	—	$1.12

Cost figures do not include items of the complete roof assembly common to both types.

* Sub-contractor's price to gen. contractor—installed (other items installed by gen. contractor).

PANEL COOLING

A new aid to air conditioning emerges from the test tube. It handles 60% of the heat load with water instead of air, cuts duct sizes and minimizes the need for special controls

No. 1 air conditioning problem for large office buildings today is how to squeeze in all the ducts and fan rooms without adding too much costly cubage to the building (in some recent cases this increase has reached 17%, not counting the cooling tower or the basement machinery rooms).

No. 2 air conditioning problem today is how to handle the great heat load caused by today's much higher lighting standards.

Other problems are how to get heat economically under every window of a continuous window building and how to minimize the need for costly individual controls.

Most original and in some ways the best solution to this combination of problems is the scheme for handling a large part of the heat load with panel (radiant) cooling worked out over the past five years by Engineer Charles S. Leopold of Philadelphia, former president of the American Society of Refrigerating Engineers.

Leopold's proposal starts with two well known facts:

1. Well over half the heat load on the average office air conditioning system is radiant energy from the sun or from electric lights. This radiant heat can be picked up by cooling panels before it even begins to heat the air.

2. To do the entire cooling job by air, conventional systems must distribute from two to four times as much air as is necessary or even desirable for good ventilation. (If they use smaller quantities of colder air the system becomes increasingly hard to balance.) Distributing so much extra air requires either greatly increased duct sizes or uneconomically high velocities. With panel cooling a 3/4" pipe can be made to carry off more heat in water than a 100 sq. in. duct usually carries off in air.

So Leopold proposed to distribute through small ducts at economical velocities only the amount of 60° air actually desirable for good ventilation (usually about 4/10 cfm per sq. ft. average). This is 40% of the usual supply of air, and it does 40% of the cooling. (Where more air is needed for good ventilation it can, of course, be supplied.) The other 60% of the cooling job, mostly to handle radiant heat, is done with cooling panels.

This system is about to get its first full-scale demonstration in the Manufacturers Life Building in Toronto (biggest commercial air conditioning installation in Canada) on which Leopold is associated with Wiggs, Walford, Frost & Lindsay as engineers for Architects Marani & Morris.

Estimates for air conditioning the new Manufacturers Life Building in Toronto with Leopold's panel cooling combination came in $80,000 lower than a conventional split system using low pressure blender units at the windows.

That answered the last of a long series of questions raised over the past four years since Leopold first suggested panel cooling to ease the air conditioning problems of the proposed Time & Life Building in New York.

First question was whether panel cooling could maintain uniform temperatures under a wide variety of physical conditions. This was answered affirmatively by a long series of experiments in the U. S. Testing Laboratories. Next question was whether panel cooling would provide pleasant working conditions for human beings. To this some surprising answers were provided by a three-year $30,000 pilot operation, which revealed a quite unexpected human comfort tolerance of plus or minus about 3°, compared with the usual plus or minus 1°. And the final question was whether the savings on duct work, fans, filters, controls and, above all, cubage would more than pay for the cost of the panel cooling.

The Toronto figures and the Time & Life Building estimates have both indicated that panel cooling can offer substantial savings on many projects. Until the bugs of installation are worked out and until quantity production lowers the cooling panel price, its direct mechanical costs are likely to be slightly higher than for a conventional system (in Toronto they were up $18,000). But even in pioneer projects this slight increase in direct cost can be offset many times over by the structural savings the plan makes possible (in Toronto these savings came to five times the added mechanical cost, giving a net saving of $80,000).

Ten good reasons for panel cooling

Along with these economies and partly explaining them, panel cooling boasts these advantages:

1) It reduces duct sizes to the point where they are so small they require little or no added ceiling height. (In the Time & Life Building the biggest horizontal duct would have been 10 x 14", small enough to run along between the deep beams instead of under them.)

2) The first cost is the last cost. The system's layout need never be changed to suit changes in tenant's office layouts.

3) The higher the heat load from the lighting, the more efficiently the panels function (whereas duct sizes for a conventional system become increasingly impractical at 4 w. or more per sq. ft., thus requiring fluorescent lighting whether the tenant likes it or not).

4) It is not necessary to zone the supply air, since the chilled water can be zoned much more economically. This effects a major saving in duct work and fan power.

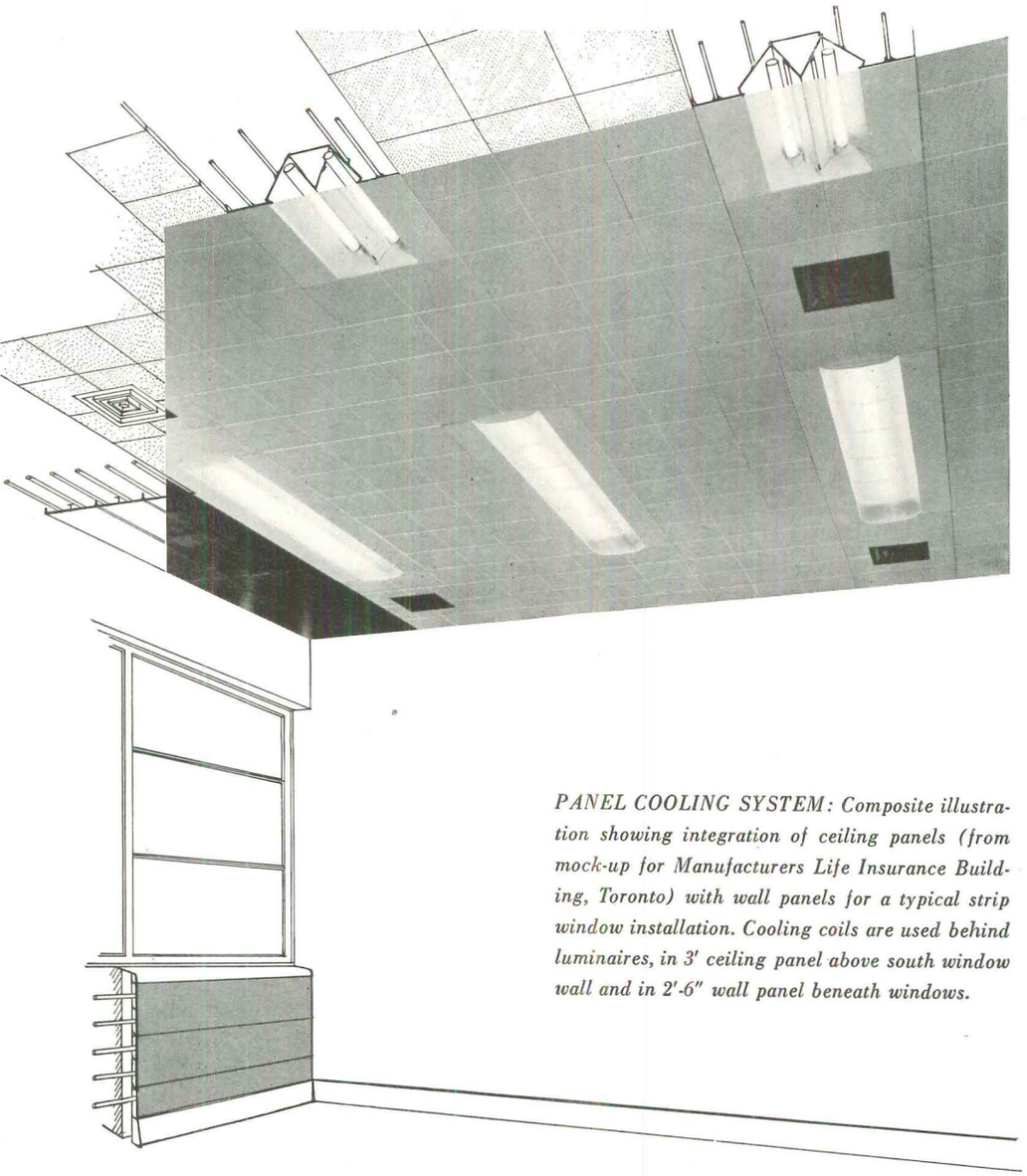
5 It creates no drafts, since relatively little air is blown into the occupied space. This lack of drafts permits low ceilings.

6) It eliminates all the problems of stratification. Temperatures are uniform from 1" above the floor to 6" below the ceiling. There is constant natural air circulation because the coolest air (instead of the hottest) is next to the ceiling.

7) It requires almost no individual controls, partly because of its own relative thermal stability, partly because it produces neither drafts nor stratification.

8) It offers an economical way to put

(Continued on page 168)

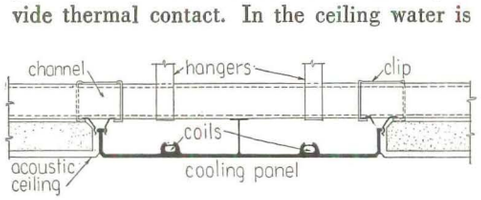


PANEL COOLING SYSTEM: Composite illustration showing integration of ceiling panels (from mock-up for Manufacturers Life Insurance Building, Toronto) with wall panels for a typical strip window installation. Cooling coils are used behind luminaires, in 3' ceiling panel above south window wall and in 2'-6" wall panel beneath windows.

How Panel Cooling Works—under the windows, on the ceiling, behind the lights

Panel cooling as used by Engineer Charles S. Leopold handles about 60% of the heat load. He covers from 25% to 50% of the ceiling with aluminum cooling panels suspended between the acoustical panels, or built into the lighting troffers—or both, as shown above. He places similar panels under the windows. The ceiling panels are kept at from 64° to 75° as required all year round, but the window panels, which provide supplementary cooling needed for the exterior zones in summer, can be used for heating in winter.

The panels are aluminum extrusions with channels into which ½" o.c. copper tubes are placed in close fit and then deformed to provide thermal contact. In the ceiling water is introduced into these tubes at a minimum of 63° (safely above the dew point) but picks up an average of 3° to 4° in keeping the panel temperature steady. Similar water temperatures can be used under the windows on sunny days in summer, but water up to 120° or more may be used there on cold days in winter to balance the cold radiation from the glass above, minimize down drafts, and keep the mean radiant temperature on the window side about the same as the other walls.



Cross-section of 12" cooling panel in suspended metal acoustic ceiling.

Simplified controls

Panel temperature under the windows is thermostatically controlled by the temperature of the window glass (which integrates the effect of air temperature, wind velocity and the sun). Ceiling panel temperature in the outside zone, where the sun load is most important, is controlled by the intensity of the sunlight as measured by a photo electric cell, since the solar light and heat curves are closely parallel. Panel temperature in the interior zones, where the electric light load is most important, can be controlled by thermostats connected with the electrical circuits, although a constant temperature all year round will frequently be satisfactory. All these controls anticipate the conditions the cooling panels will have to meet—a great advantage over thermostats controlled by room temperatures.

Where fluorescent lighting in recessed troffers is desired Leopold has designed a special extrusion (see diagram) which makes the cooling panel itself serve as the fixture. This cooled luminaire removes as much heat as possible at the source, picking up not only radiant but also conducted and convected energy. A further advantage of these luminaires is that they simplfy the ceiling pattern by using one element to do the work of two.

The small air conditioning duct sizes which go with panel cooling make it relatively economical to plan one air outlet in every 100 sq. ft. of ceiling as part of the original installation, so that no matter what layout changes the tenant may later desire, the air distribution need not be changed.

Ducts between the beams

Even for big floors horizontal ducts need not be over 10 x 14', small enough to run between deep beams at their neutral axis instead of under them. (Sometimes this may require a venturi.)

Thickness of the aluminum panel and spacing of the copper tubes are matters of economics. The wider the spacing the thicker the aluminum must be. The Aluminum Co., which is using an adaptation of Leopold's plan in its new Pittsburgh offices, used wide spacing and therefore more aluminum. Leopold uses aluminum .062" thick with his tubes on 6" centers.

The panels work more efficiently if covered with heat absorbing paint containing a small amount of copper phosphate.

The panels can be perforated to do double duty as acoustical panels if necessary, however covering merely one-third of the ceiling with acoustical pans backed with mineral wool will do 80% as good an acoustical job as the same acoustical treatment on the entire ceiling.

The cooling effect of the upper side of the ceiling panels is by no means wasted, since it keeps the floor slab from heating up. It can also be used to pick up the heat load from the ballast for fluorescent lights.

heat under every window in a continuous window building.

9) By cutting air quantities 60% it makes electrostatic air cleaning much less expensive.

10) It requires no fan rooms on office floors, since air quantities and velocities are low enough to have permitted (in the proposed Time & Life Building) blowing the air economically 13 floors up and ten floors down from central fan rooms.

To save space worth $5 a foot

Panel cooling was first suggested by Leopold to answer just one problem: the really tremendous cubage that would have had to be added to the Time & Life Building to accommodate any other cooling system which did not involve sacrificing valuable perimeter space for cooling units under each of the building's 9,000 windows. No tall building of comparable size had ever been air conditioned, and the air conditioning problems raised by a building in which every square foot was worth $5 a year or more in rent had never been faced.

A conventional system in the Time & Life Building would have increased all the floor to floor heights at least 1′, squeezed out two rentable floors, greatly increased the wind bracing problem in the tower, or broken up tenant layouts with some 40 large fan rooms on the office floors. A window unit system for the exterior zone alone would have used up nearly 50,000 sq. ft. of prime perimeter floor area and a separate conventional system would still have been necessary for the interior zone.

Leopold's associates on the Time & Life project (architects Harrison & Abramovitz, builder Andrew Eken and consultant J. O. Brown, who had been in charge of all construction on Rockefeller Center) viewed with alarm the idea of making a $32 million building the pilot plant for so radical an innovation as radiant cooling. It had never been tried on even a small building in this country, and its few applications in England, France and South Africa had proved very little. The whole technology of radiant cooling was still unknown. However, the cubage savings it offered were so great that the owners invested in the necessary experimental work—installation of panel cooling and air conditioning in a suite of offices in the existing Time & Life Building which has since been the basis for four ASRE and ASHVE papers by Leopold.

Conclusion of all this research was that panel cooling offered many unexpected advantages and that none of the expected difficulties was serious. (Exception: the cost of the first few installations will certainly be subject to inflation by mechanics and subcontractors performing unusual work.)

Aluminum panels with copper coils

Leopold's original thought had been to bury the cooling pipes in the floor slab or plaster ceiling (as in the usual radiant heating job) but he soon gave up this idea, because any such floor installation would respond very sluggishly to changing heat loads. Instead, he began working with the Bohn Aluminum & Brass Co. on an aluminum extrusion to which the copper cooling pipes could be attached (see diagram). This could be suspended under the floor slab and integrated with acoustical panels. The high conductivity of the aluminum would make the whole panel almost instantly responsive to changes in water temperature to meet changes in heat load.

Leopold's research quickly focused on the lack of accurate data on how heat goes into storage in the masonry of a building during the day. Most air conditioning systems unknowingly rely heavily on this effect; therefore even poorly designed systems perform much better than might be expected by conventional calculations. The cooling panels would quickly pick up most of this heat that usually just seems to disappear. Consequently, Leopold had to make unusually precise studies on how fast his cooling panels could handle their heat load.

One problem which caused some early concern was the danger of sweating if the cooling panels got below the dew point, which seldom gets above 59° in air-conditioned space. It was soon found that a panel temperature of 65° is low enough even when cooling panels are used in only a portion of the ceiling. In fact, the temperature differential between the light source and the panels is so great that even if the ceiling panel temperature were 80° the panels would still help to cool the room, since they would pick up more heat from the lights than they would re-transfer.

A new concept of temperature tolerance

One wholly unexpected development during the testing period was the increased tolerance for both higher and lower temperatures shown by the Time & Life employees who have been working for the past three years in the test installation. They did not appear to notice when the temperature was deliberately lowered from 75° to 70° without their knowledge and did not object when it was raised to 78°. This was so surprising to the owners that they consulted the Pierce Foundation which explained that the complete lack of stratification made the higher temperatures satisfactory, while the absence of drafts made colder temperatures satisfactory.

This wide tolerance is only one reason the panel cooling system minimizes the need for individual controls. Another and equally important reason is the thermal stability of the system itself. For example, in a conventional air conditioning system using a 13.3° differential in its supply air, tests with a hydraulic analogue (a machine devised by Leopold to simulate heat transfer and storage) indicated that a change in lighting load from 50% normal to 150% caused a 7° change in room air temperature. On the other hand, in a full ceiling panel cooling system with limited supply air at 18° differential, the same change in lighting load caused only a 4.3° change in room air.

ZONE VS. INDIVIDUAL CONTROL—an analysis of comfort requirements by Leopold

"If two or more people are constantly working in one room, they tend to require the statistical optimum (temperature and humidity) and individual control is usually not required to maintain conditions other than the optimum. . . . In a single occupancy private office, there may be a demand for separate temperature control, either because the occupant wishes a small adjustment representing his departure from the statistical average, or because he wants to feel cold or warm. . . . There are two reasons for a multiplicity of controls or of control by small area. The first, if because of design it is necessary in order to maintain the selected optimum for the group; and the second, where it is desired to maintain a special condition for an individual which would not be acceptable to the group. Individual control is generally costly and can frequently be avoided by proper design and control of a zoned system. In this latter case, the determining factor is how well the system can meet different loads in adjacent areas of the same zone. . . .

"For years there have been installed zone systems in which air is introduced at from 12° to 25° below maintained room temperature. For two rooms side by side; one occupied with the lights on, one unoccupied with the lights off, there would be anticipated a marked difference in temperature. In fact, if no factors such as heat storage were taken into account, the one room could be assumed to differ from the other by the amount of the temperature difference of the air introduced and the general average of air temperature in that zone. Actually, it is found that these differences do not materialize to this degree. This helpful phenomenon has been accepted and assumed as a result of thermal storage, but storage, until recently, was considered as being caused by the warm air heating the structure by convection. It is now known that this effect is greatly accelerated by radiation and that the structure is frequently warmer than the room air. An overloaded room . . . does not get so warm as one would expect because radiation has accelerated the rate of storage."

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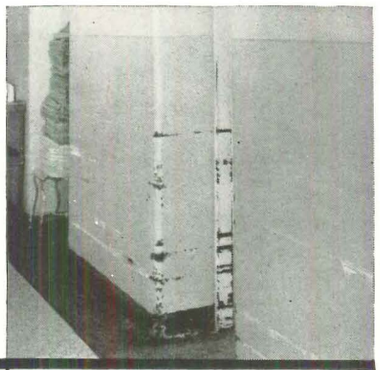
HOSPITAL BUILDING NOTES

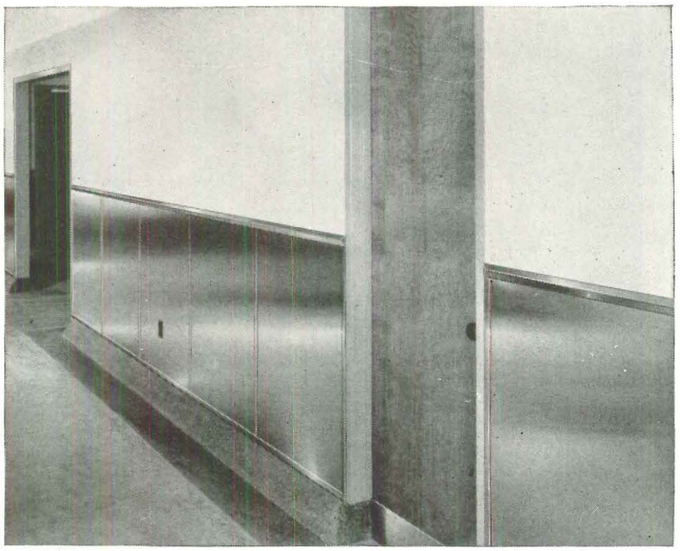
The operating floor of the Cincinnati General Hospital was wainscoted with Armco Stainless Steel to create a permanent wall that's hospital-clean in every respect.

Samuel Hannaford & Sons, Architects

Wm. Leuvelink & Son, General Contractor

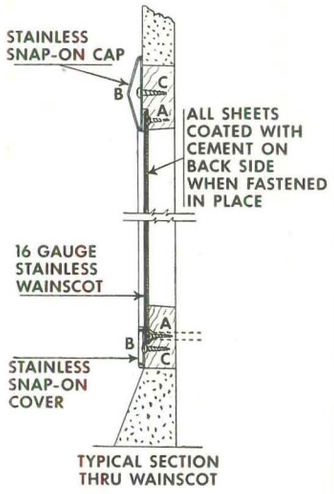
The plaster wainscoting in an adjoining wing of the hospital was scarred and badly worn, as this photograph of a typical section of wall shows.



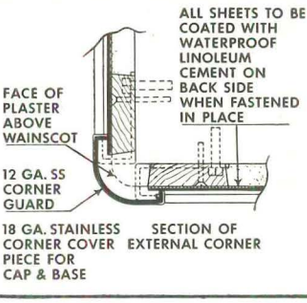


Finished installation—The cleanliness and attractive appearance of the new wainscoting are evident today, as they will be years from now. Armco Stainless Steel was selected primarily for its permanent beauty, sanitation and low maintenance cost.

Section through wainscot shows 16-gage Armco Stainless sheet cemented to wall and held in place at points "A" by screws to wood. Snap-on moldings ("B") are held by supporting clips ("C") screwed in wood.



Section of external corner shows 18-gage stainless cap (same as base) on 12-gage stainless corner guard. Steel anchors, welded, hold the guard in place.





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Original structure was designed by Walker & Eisen, architects. E. A. Evans was structural engineer. William Simpson Construction Co. was contractor. Addition was designed by Claude Beelman, architect and Herman Spackler, associate architect. Beatty & Clar were the structural engineers on the job and C. L. Peck was the general contractor.

Architectural Concrete

structures can be attractively enlarged

WHEN the three-story Farmers Insurance Exchange building was erected in Los Angeles in 1937, it was built of architectural concrete and looked as shown above, left. In 1948 it was enlarged to a six-story structure. Again architectural concrete was used.

The remodeled structure shown at the right, above, is an expansion on the same architectural lines of the original building. This job illustrates how attractively buildings designed in architectural concrete can be enlarged or remodeled.

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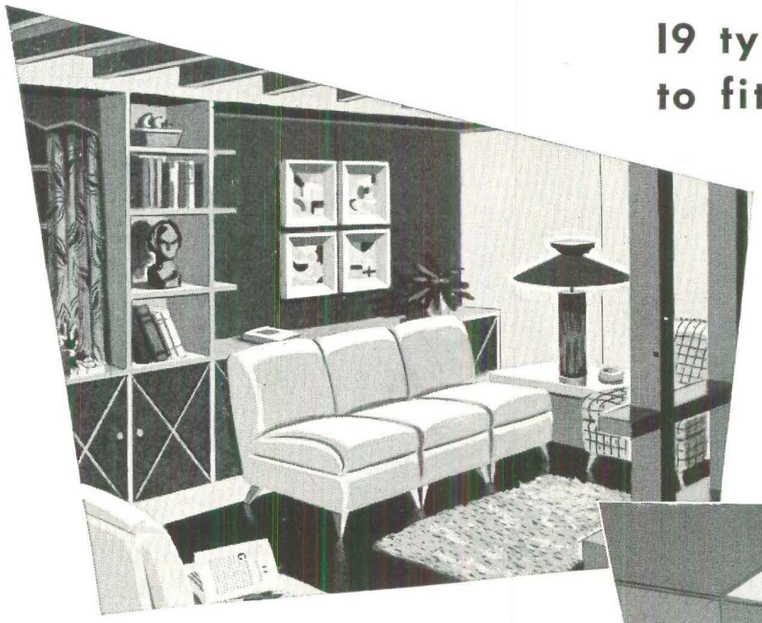
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DWYER PRODUCTS CORPORATION Dept. MB551 MICHIGAN CITY, INDIANA

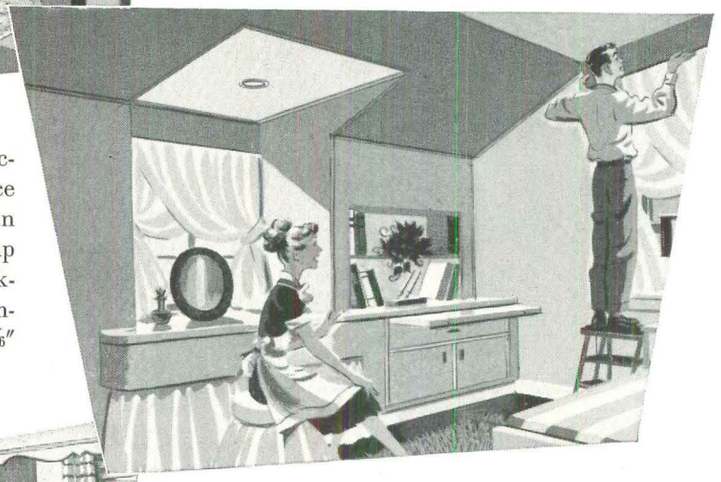
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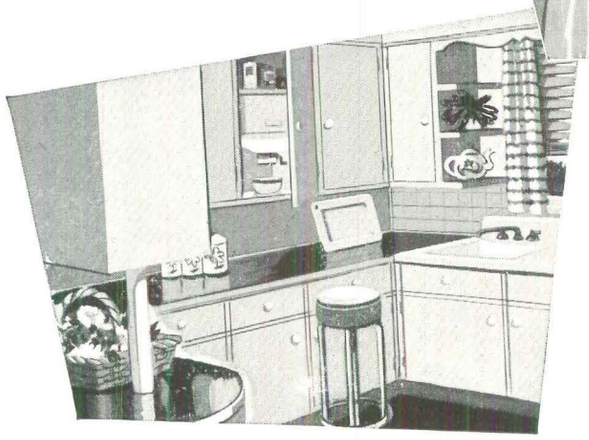
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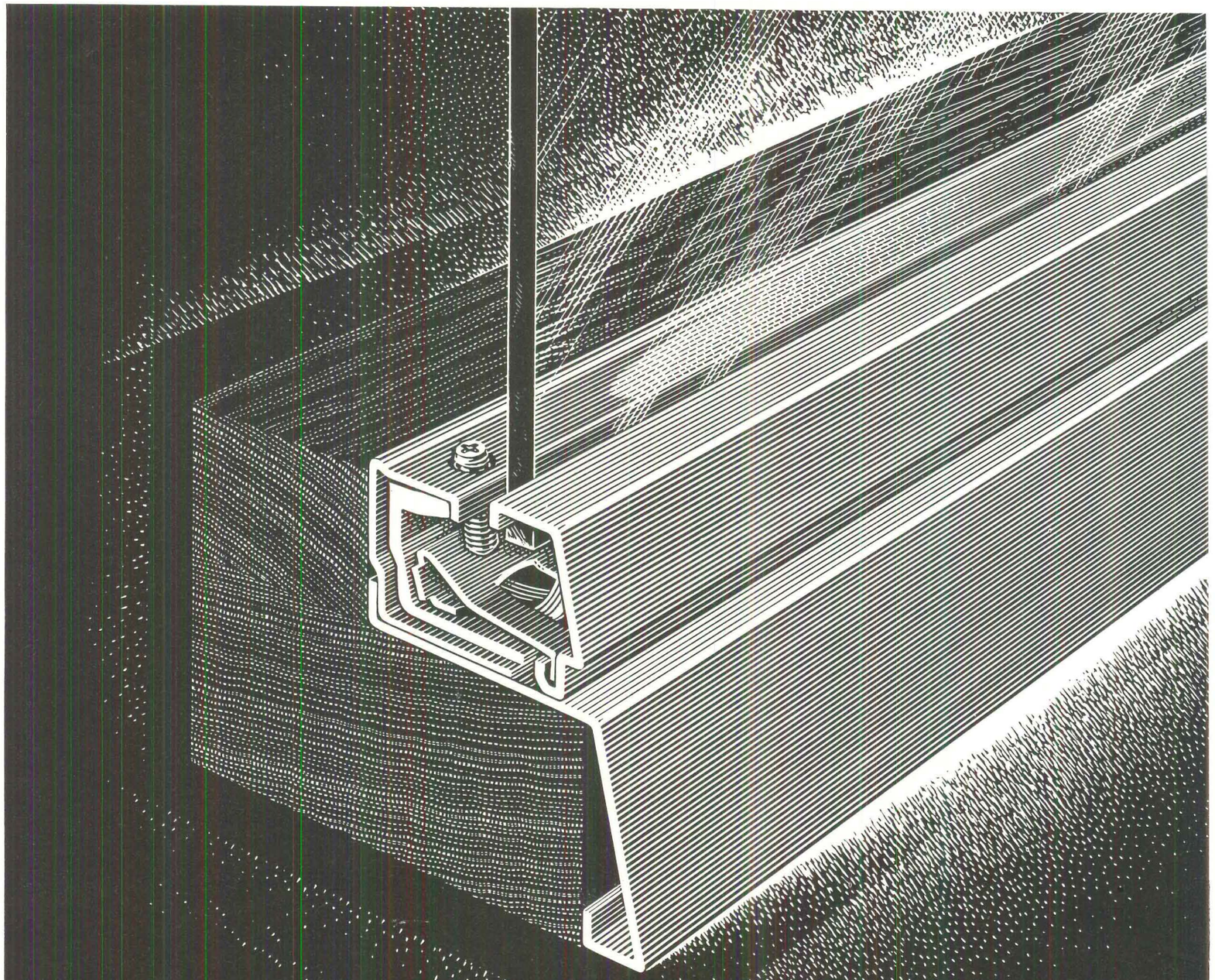
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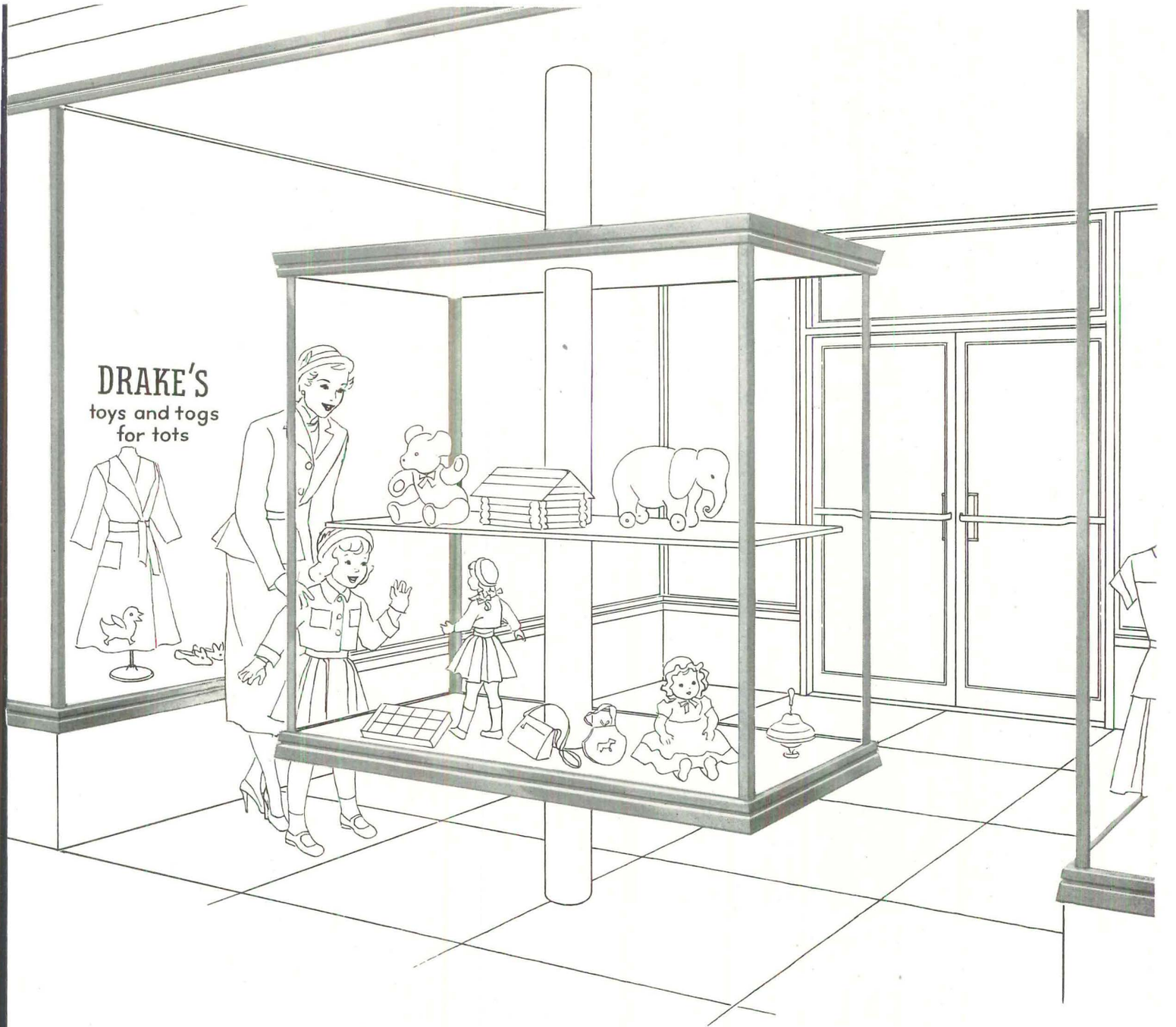
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(Continued from page 103)

stood. We refer to the accurate precutting of framing members not at the site, but at the point of production. By virtue of their purchasing power the large-scale builders have long been able to obtain this advantage. The savings lie in a) less wasteful cutting, b) elimination of waste freight loads, c) vastly simplified assembly procedure at the site, including a minimum of cutting and piecing finish dry-wall materials.

We consequently recommend that wherever possible, government-sponsored building be based upon a standard ceiling height of 8′-¾″ from rough floor to bottom of joists. The lumber industry will thereby be strongly encouraged to make available accurately precut, square-end studs in a standard length of 7′-8″ for use with either the platform type or slab-floor framing. The savings to small builders not to mention the relief to railroads and the conservation of lumber can become enormous. This dimension is recommended because it involves the minimum of cutting for wallboards or panel materials.

For similar reasons we urge that government-sponsored building, wherever possible, be predicated on joist lengths which add 8″ to the present standard lengths, so that joists may be produced in a series of lengths of 10′-8″, 12′-8″, 14′-8″. This will again make possible dry-wall construction with a minimum of cutting, and will greatly expedite house production.

Trusses. We endorse the Round Table findings on the subject of open-roof trusses permitting maximum attic use, usually with disappearing stairs. We urge that research be undertaken on the indeterminate design problem and that such standard designs then be designated universally acceptable by government agencies and local codes.

MASONRY

We recommend that cavity walls be universally permitted without masonry through-ties. The thickness required in masonry walls should be set by engineering considerations, rather than by arbitrary codes based on obsolete labor habits and other hold-overs. We recommend that the Housing & Home Finance Agency set up the engineering basis to be used on government-sponsored housing and that pressure be brought on local code authorities to bring about necessary revisions.

Packaged chimneys approved by the Underwriters Laboratories should be permitted.

Four inch thickness of masonry surrounding a terra cotta flue liner should be deemed sufficient.

Concrete chimney blocks with flue liners should be permitted to save the time that would be required to lay brick and to reduce the load on the foundation.

PLUMBING

(a) We suggest that codes be revised to permit that industry be encouraged to produce, and labor encouraged to install, a standard plumbing assembly adapted to the preferred in-line type of bathroom backing upon a kitchen. Dimensions should be as follows: from center of toilet drain to center of wash basin drain, 2′-0″; from center of wash basin drain to center of bath drain, 2′-4″.

(b) The savings to be obtained from such a prefabricated, universally available, plumbing assembly are almost incalculable.

(c) As proposed by the Round Table, we urge adoption of the proposed National Plumbing Code*

(d) *Septic Tanks.* We recommend that a septic tank design be standardized as a unit per family and independently of the number of bathrooms.

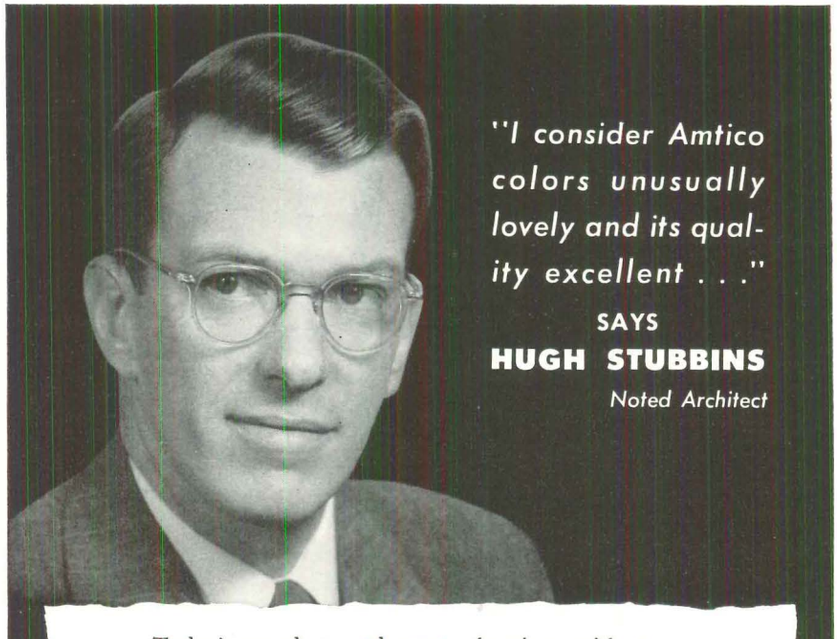
(e) *Sewers.* We urge for special attention that cities now requiring a cast iron house sewer should revise their codes to permit appropriate substitute materials.

(f) *Drains.* There should be immediate testing by the Bureau of Standards of slip-seal and other new types of joints, with a view to determining materials to be used in the house drain.

(g) *Inside Bathrooms.* FHA regulations and

(Continued on page 182)

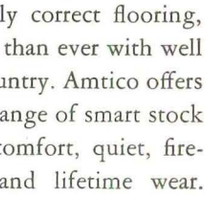
* Sponsored by: American Public Health Association, American Society of Mechanical Engineers, American Society of Sanitary Engineering, Building Officials Conference of America, Conference of State Sanitary Engineers, Western Plumbing Officials Association, National Association of Master Plumbers, Uniform Plumbing Code Committee, Federal Housing & Home Finance Agency, Department of Commerce, Public Health Service.



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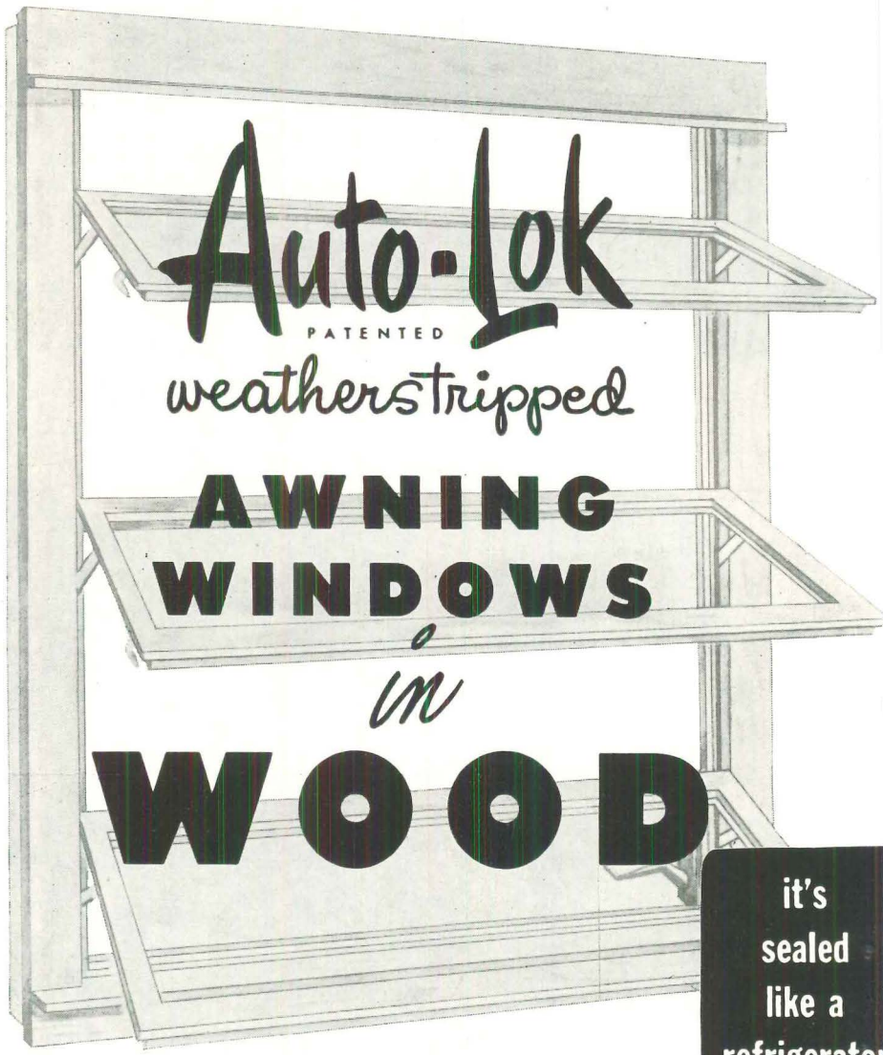
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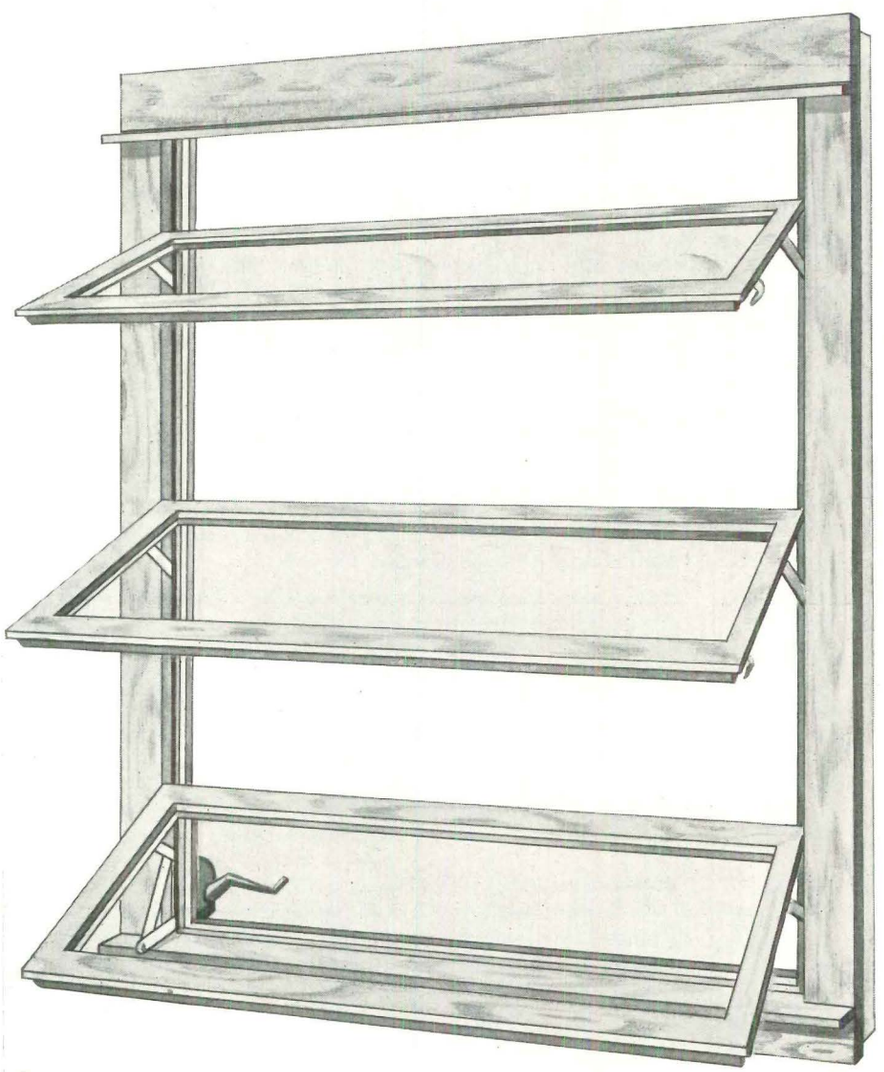


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How HOUSE BEAUTIFUL Has Concentrated Its Efforts To Bring The Story Of Climate Control To The Public And The Building Industries

September 1949...HOUSE BEAUTIFUL's Climate Control Project was introduced to the building industry at a meeting held at the Waldorf-Astoria in New York City. More than 400 representatives of building and allied industries as well as scientists and engineers attended.

Visit to HOUSE BEAUTIFUL's first actual Climate Control and Pace-Setter House at Orange, New Jersey by group attending meeting at the Waldorf-Astoria.

Climate Control introduced to the public with HOUSE BEAUTIFUL's October 1949 issue. Forty-nine pages of editorial matter were devoted to the subject. Complete regional analysis of the Mid-Ohio area was included.

October 1949...Metropolitan New York-New Jersey Area Analysis published in November issue of HOUSE BEAUTIFUL presenting HOUSE BEAUTIFUL's first Climate Control Pace-Setter House in Orange, New Jersey.

Analysis of Mid-Ohio Area was published in the Bulletin of the American Institute of Architects for October.

November 1949...Area Analysis of the Metropolitan New York-New Jersey Area appeared in November issue of the Bulletin of the American Institute of Architects.

December 1949...National Warm Air Heating & Air Conditioning Association 36th Annual Convention at Cleveland, Ohio, December 14-15, addressed by Elizabeth Gordon presenting Climate Control Project.

Climate Control for South Florida-Miami Area presenting 2 existing houses in Miami and Coral Gables published in January 1950 issue of HOUSE BEAUTIFUL.

January 1950...Address on Climate Control by Dr. Howland before Eastern Association of Nurserymen, New York.

Building Research Advisory Board of the National Research Council National Academy of Sciences devoted January 11 meeting to presentation of "Weather and the Building Industry"—a meeting called to inform the building industry —at the scientific level—of HOUSE BEAUTIFUL's Climate Control Project. An address was made by James M. Fitch.

January 1950...Chicago, Illinois. Address by Dr. Howland before Midwest Nurserymen's Association.

Miami, Florida. Address by James M. Fitch, HOUSE BEAUTIFUL's Architectural Editor, to members of Producers Council Chapter discussing HOUSE BEAUTIFUL's Climate Control Project, and the Miami Area in particular.

Jacksonville, Florida. Address by James M. Fitch to Producers Council Chapter members in Jacksonville discussing HOUSE BEAUTIFUL's Climate Control Project, and the Miami Area in particular.

Philadelphia, Pennsylvania. Address by Dr. J. E. Howland, Gardening Editor of HOUSE BEAUTIFUL before Annual meeting of Pennsylvania Nurserymen discussing HOUSE BEAUTIFUL's Climate Control Project.

Columbus, Ohio. Address by Dr. J. E. Howland before Ohio Nurserymen's Association.

Miami-Southern Florida Area Analysis presented in January Bulletin of the American Institute of Architects.

February 1950...Chicago, Illinois. National Association of Home Builders Convention. Address by Elizabeth Gordon. 1500 builders present. One session of the Convention devoted to Climate Control.

March 1950...Presentation of Arid Southwest Area Analysis in April 1950 HOUSE BEAUTIFUL.

April 1950...Arid Southwest Analysis published in April Bulletin of the American Institute of Architects.

Mid-Mississippi Area Analysis presented in May issue of HOUSE BEAUTIFUL.

Publication of Building Research Advisory Board Conference report #1—Weather & The Building Industry.

May 1950...Kansas City, Missouri—Address by James Fitch to Producers Council Chapter members on Climate Control in the Mid-Mississippi Basin.

St. Louis, Missouri—Address by James Fitch to Producers Council Chapter members on Climate Control on the Mid-Mississippi Basin.

Mid-Mississippi Area Analysis published in May Bulletin of the American Institute of Architects.

June 1950...Houston, Texas—Address by James Fitch to Producers Council Chapter members on Climate Control and Preview of Gulf Coast Region.

New Orleans, Louisiana—Address by James Fitch to Producers Council Chapter members on Climate Control and Preview of Gulf Coast Region.

Gulf Coast Area Analysis in July 1950 issue of HOUSE BEAUTIFUL.

July 1950...Washington, D. C.—Address by Dr. J. E. Howland before National Association of Nurserymen on HOUSE BEAUTIFUL's Climate Control Project.

Gulf Coast Area Analysis published in July Bulletin of American Institute of Architects.

September 1950...Chicago Area Analysis presented in Bulletin of American Institute of Architects.

First year report on the Climate Control Project published in October issue of HOUSE BEAUTIFUL.

November 1950...Twin City Area Analysis presented in November Bulletin of the American Institute of Architects.

December 1950...The Housing & Home Finance Agency —the Government's top housing authority—asked Building Research Advisory Board to set up a committee to inquire into the next steps to advance the applying of climate data to building design.

January 1951...Washington, D. C. Area Analysis presented in Bulletin of the American Institute of Architects.

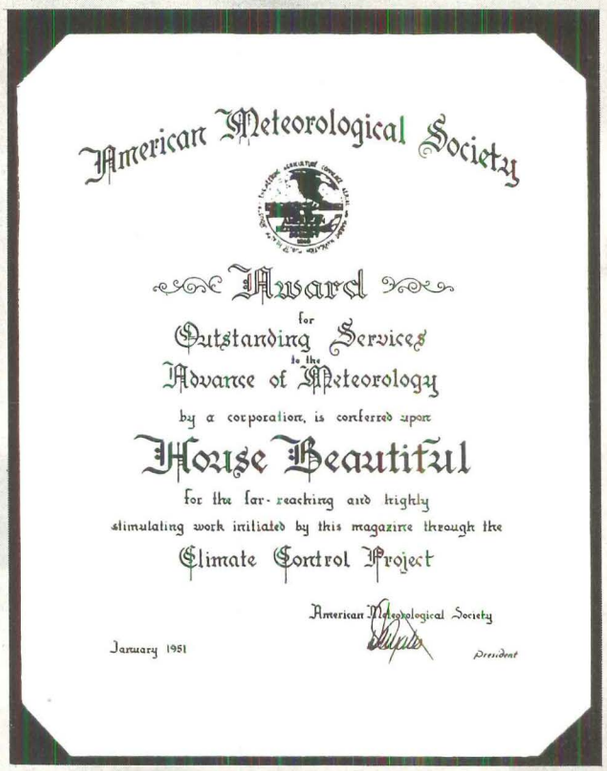
American Meteorological Society presents award to Elizabeth Gordon for HOUSE BEAUTIFUL's Climate Control Project.

February 1951...Twin Cities Area Analysis presented in March issue of HOUSE BEAUTIFUL.

James Fitch addresses Twin Cities Chapter of Producers Council members—re Twin Cities Climate Control Analysis.

March 1951...Washington, D. C. Area Analysis in April HOUSE BEAUTIFUL. Climate Control house shown.

Boston, Massachusetts Area Analysis presented in March Bulletin of the American Institute of Architects.



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House Beautiful

for the far-reaching and highly

stimulating work initiated by this magazine through the

Climate Control Project

American Meteorological Society

January 1951

President

"...for Outstanding Services..."

On January 31st, Elizabeth Gordon, Editor of HOUSE BEAUTIFUL, accepted on behalf of the magazine an Award for Outstanding Services to the Advance of Meteorology. This award, conferred by the American Meteorological Society, cited "the far-reaching and stimulating work initiated by this magazine through the Climate Control Project."

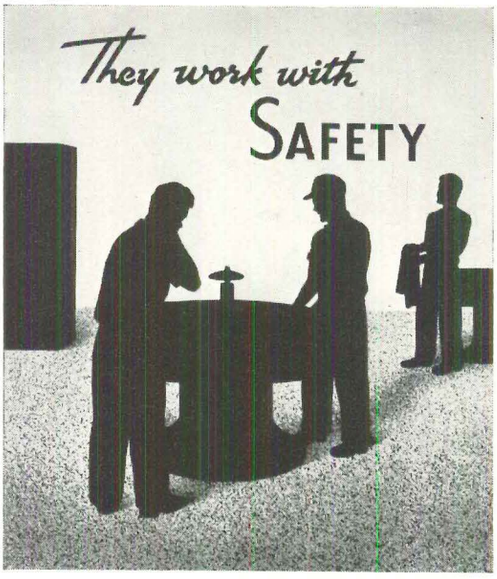
HOUSE BEAUTIFUL is proud to add this latest achievement to the unusual acclaim and acceptance that the Climate Control Project has received in its short 18 months of existence. We are especially proud because this award marks the first time such an honor has been bestowed upon a private corporation in the 51-year history of the American Meteorological Society.

But far beyond our pride is the satisfaction we feel in knowing that Climate Control has, in only 18 months, become an integral working part of the many industries crossed by this highly specialized knowledge. Such pioneering as is evidenced in HOUSE BEAUTIFUL'S Climate Control Project is, we feel, pushing the world another notch ahead.

House Beautiful Magazine

572 Madison Avenue, New York 22, N. Y.

Technical information prepared by the A.I.A. on each of the areas studied in HOUSE BEAUTIFUL's Climate Control Project is available from HOUSE BEAUTIFUL at 50¢ each.



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city codes should be revised to permit an inside bathroom with gravity ventilation. In many house plans this will lead to a significant saving in corridor space, coupled with an increase in livability.

ELECTRIC

All cities and agencies should be urged immediately to adopt the national electric code.

FHA regulations should immediately be revised to void provisions compelling the installation of ceiling lights in rooms other than kitchens, halls and stairs and pressure should be exerted to have local codes modified to conform.

Since nonmetallic protective systems are available which are just as economical and just as satisfactory as metallic installations, NPA should not allocate steel for conduits and fuse boxes for residential use.

Since electrical requirements of the great majority of houses are very similar, BRAB and the FHA should collaborate in setting up a standardized installation for government-sponsored projects.

Similarly, we endorse the Round Table proposals relating to substitution of aluminum for copper, where copper is regarded as more critical than aluminum.

HEATING

Obstacles should be removed, in codes and the building requirements of government agencies, to the use of economical heating systems when these are approved by the American Gas Association or the Fire Underwriters, and are used in the manner under which they were tested. For example, the useless requirement now prevailing in some areas of a separate 100 sq. ft. heating room or the requirement of a brick chimney over a gas furnace, should be instantly voided.

DIMENSIONAL COORDINATION

The National Association of Home Builders, The American Institute of Architects and The Producers' Council are doing all in their power to promot the use of dimensional coordination. Government agencies should be encouraged to follow suit for the sake of the saving of time and material inherent and now obtainable, and which will be increased in proportion to wider acceptance.

Since a building may be built of non-modular materials from modular plans at no additional cost, government agencies should give great impetus to the modular trend by requiring that all *drawings* for projects wholly or partially financed or subsidized by the government be modular without rigidly requiring that modular *materials* be used. This would incur no hardship on projects located where some modular materials may not be available.

ARCHITECTURAL DESIGN

We heartily endorse the Round Table recommendation that FHA immediately advise all its 62 local offices to recognize the increasing public acceptance of contemporary design, and that some action in this direction be taken by the U. S. Savings & Loan League and Bankers Mortgage Association for the sake of the manifest economies which are cut off by the present interdictions.

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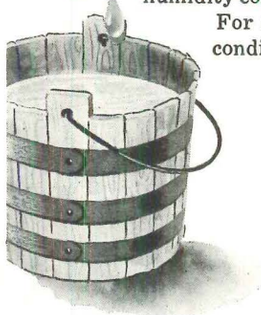


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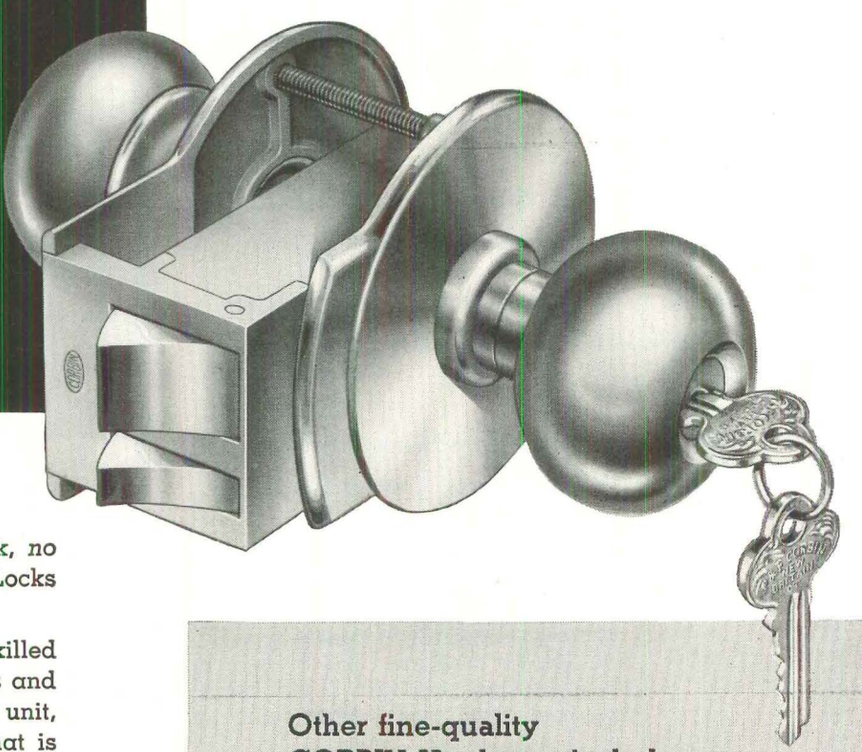
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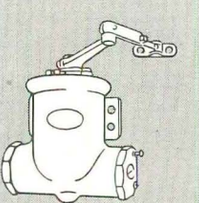
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The American Hardware Corporation
New Britain, Connecticut, U.S.A.

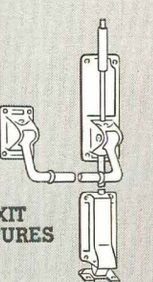
GOOD BUILDINGS DESERVE GOOD HARDWARE

CORBIN

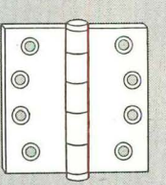
Other fine-quality CORBIN Hardware includes:



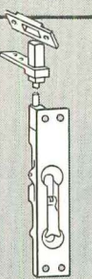
DOOR CLOSERS



EXIT FIXTURES



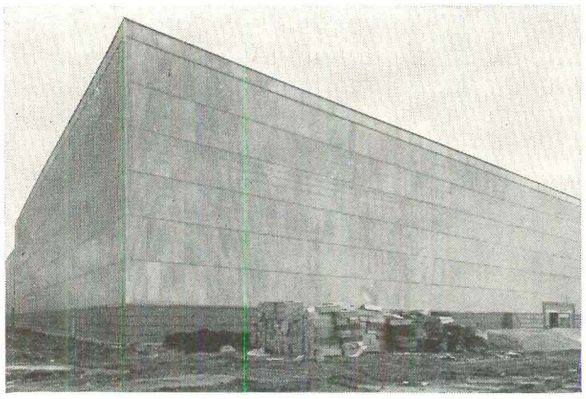
CAST IRON BUTTS



FLUSH BOLTS

CORRUGATED TRANSITE* ... *alone or in combination with other materials*

*Transite is a registered Johns-Manville trademark





You can build the entire exterior with these streamlined sheets...

or use them equally well with other materials to develop attractive contrasts.

Transite sheets can't burn, rot, or rust—and they're not expensive.

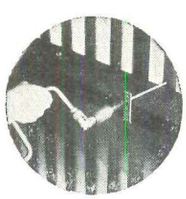
WHEN Corrugated Transite is used by itself for exterior walls, the effect is often one of massive, streamlined simplicity, as you can see by the appearance of the gigantic plant, upper left.

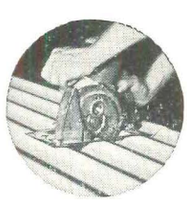
Combined with stone, brick, or glass, Johns-Manville Corrugated Transite helps create striking architectural contrasts, as in the United Airlines Maintenance Base in San Francisco.

Applied either vertically or horizontally, the corrugations in the Transite sheets cast the pleasing shadow lines so desirable to architectural design.

The natural light gray color of Transite is attractive without further decoration, and the material itself never needs paint to preserve it. In fact, Corrugated Transite is *rotproof, weatherproof, fireproof.*

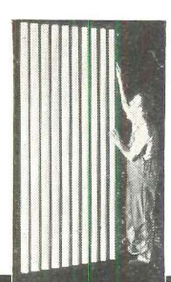
The large sheets permit rapid application, a minimum of framing, lower construction cost. When need for alteration arises, the sheets are almost 100% salvageable. If you plan to build—*and particularly if you have a problem of rapid industrial expansion for military defense*—investigate the possibilities of Corrugated Transite. Write Johns-Manville, Box 158, Dept. MB, New York 16, N. Y.


EASY TO FASTEN TO STEEL


EASY TO SAW


EASY TO DRILL


EASY TO NAIL TO WOOD



JM PRODUCTS

Johns-Manville *Asbestos* **CORRUGATED TRANSITE**



2 Beautiful Floors... by Johns-Manville

Save work...No scrubbing...Easily kept spick-and-span!

Johns-Manville Terraflex is an entirely new and different luxury floor tile. Made of vinyl plastic and asbestos and completely proof against greases, oils, and alkalies, it is practically *indestructible*. Possesses a clarity and warmth of color hitherto obtainable only in rich carpetings. Unharmed by commonly used cleaning solutions, Terraflex cannot be "washed out" and will last a lifetime. *Ideal for kitchens and cafeterias.*

J-M Asphalt Tile is of course the modestly priced flooring that has been a standard of quality for decades. Comes in a wide range of marbleized colors.

See the J-M Approved Flooring Contractor in your area. He is listed in the classified phone book. Or write Johns-Manville, Box 158, New York 16, N. Y.





TERRAFLEX
VINYL PLASTIC - ASBESTOS TILE
AND
J-M ASPHALT TILE

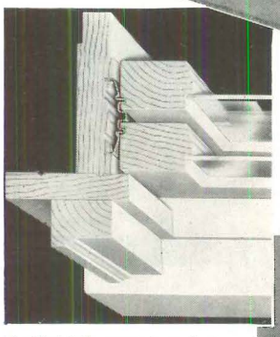
JOHNS-MANVILLE JM PRODUCTS

MEMBER ASPHALT TILE INSTITUTE

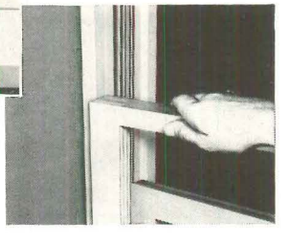
Other J-M products include Acoustical Ceilings—Movable Walls—Corrugated Transite®—Built-Up Roofs—Etc.

TO SATISFY CLIENTS *specify* SUPERIOR UNIT WINDOWS





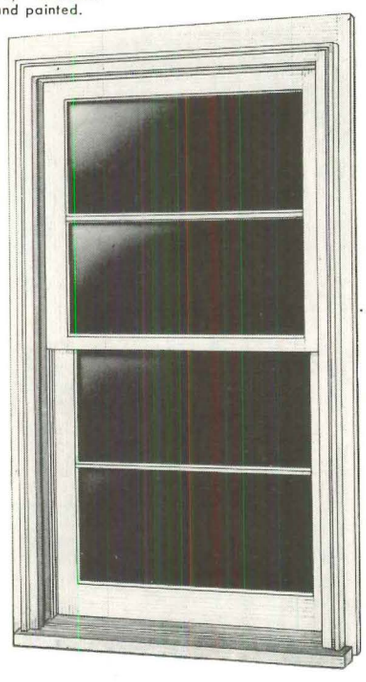
Sash can be installed or removed at any time without removing weatherstrip. It automatically compensates for all possible swelling or shrinking of the sash in width or thickness.



The Bilt-Well patented weatherstrip is the outstanding feature of the Superior Window. It is a cushion type, jamb liner weatherstrip, nailless and flexible.

All Bilt-Well Products are packaged or bundled units, completely machined and ready to be set up and painted.





The Superior Window is not just another window. It includes a jamb-liner which equalizes all dimensional variations due to atmospheric conditions and provides a weather-tight snug fit at all times. It's a complete weather-strip window!

Superior offers tremendous advantages in reducing building costs and lowering maintenance. It saves both time and money.

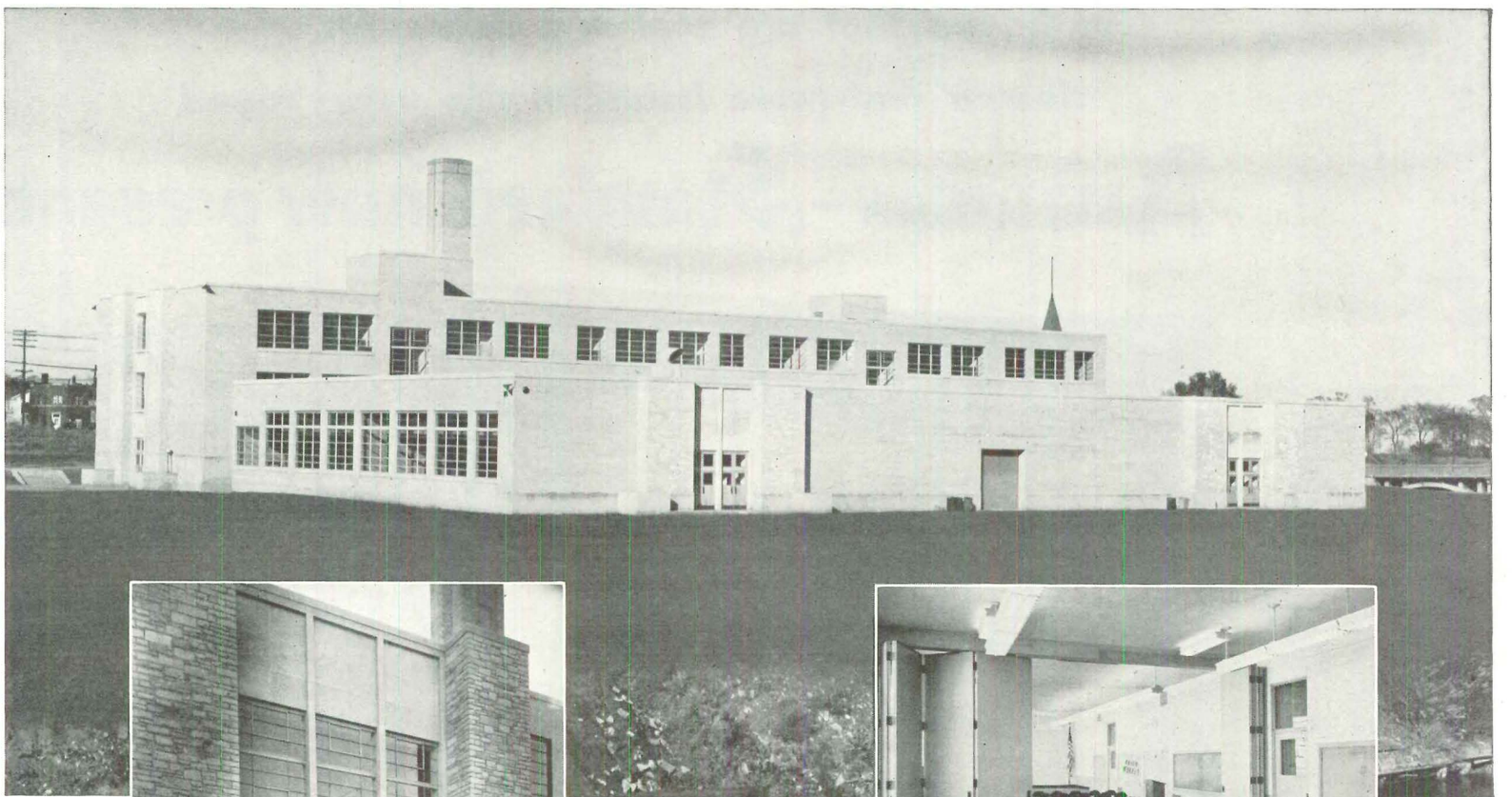
Superior is built to last, of thoroughly seasoned, kiln-dried Ponderosa Pine with 1⅛″ thick jambs and 1¾″ thick sills chemically treated with the approved NWMA toxic water repellent solution. With the Superior, the sash can be installed or removed while plastering and painting without damaging the weatherstrip. It is counterbalanced with overhead spring balances guaranteed for the life of the building insuring easy, smooth sliding windows.

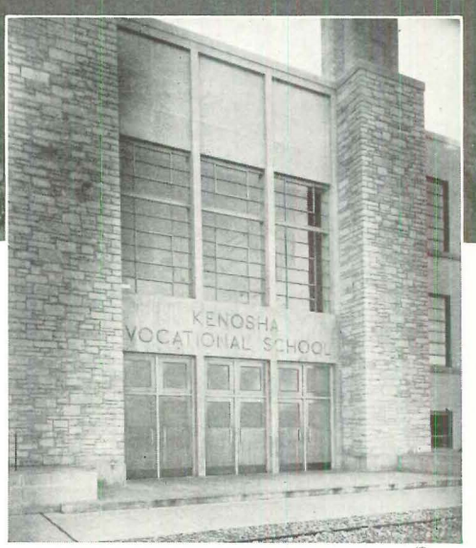
The Superior Window is distributed throughout the 37 eastern states and is available from your regular source of supply for building materials—your local Lumber Dealer.

We also manufacture: Mantels & Telephone Cabinets • Multiple-Use & Linen Cabinets • Stair Parts • Nu-Style Cabinets • Superior Unit Wood Windows • Exterior & Interior Doors • Entrances • Shutters • Clos-Tite Casements • Carr-dor Garage Doors • Basement Unit Windows • Louvers & Gable Sash • Breakfast Nooks • Combination Doors • Screens & Storm Sash • Corner (China) Cabinets • Gli-dor Cabinets • Ironing Board Cabinets.

CARR, ADAMS & COLLIER CO., *Dubuque, Iowa*

P&L Odorless Wall Paint *chosen for this $1,500,000 Vocational School*





KENOSHA VOCATIONAL HIGH SCHOOL, KENOSHA, WISCONSIN
W. F. McCAUGHEY AND ASSOCIATES, Architects, Park Ridge, Ill. THE GEORGE SOLLITT CONSTRUCTION CO., General Contractor, Chicago. BRADLEY & ANDERSON, Mill Contractors, Oshkosh, Wis. J. M. ECKERT CO., Painting Contractor, Chicago.

EQUIPPED with the most modern facilities, this well-planned vocational school is one of which the Kenosha Vocational School Board is justly proud. Representing an investment of $1,500,000, the project will long pay dividends through the work of grateful students trained there.

The architects and school authorities, in planning this vocational school, achieved maximum results in co-ordinating its various departments. Classrooms may quickly be converted into assembly or lecture rooms by means of easily-operated, folding partitions. An intimate knowledge of shop practices and an appreciation for technical skill are also reflected in the layout of the school.

As in many schools, throughout the Country, this fine structure was finished with Pratt & Lambert Paint and Varnish, including **odorless** Lyt-all Flowing Flat.

Prompt, practical aid in securing proper decoration for any structure is available from the nearest Pratt & Lambert Architectural Service Department.

PRATT & LAMBERT-INC., Paint & Varnish Makers
NEW YORK · BUFFALO · CHICAGO
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Save the surface and you save all!

PRATT & LAMBERT PAINT AND VARNISH

REGISTERED P&L TRADE MARK

For homes that are cool in summer . . .

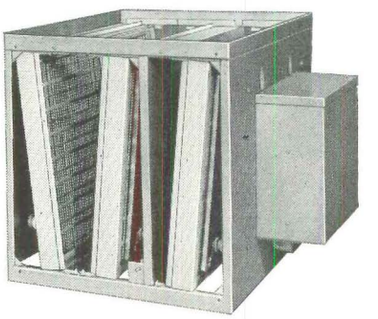
cleaner and more healthful the year 'round

AMERICAN-Standard now presents



two sensational new products

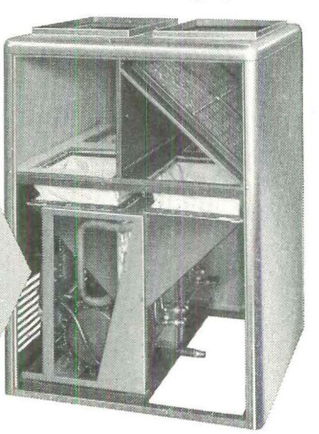
THE MAGNE-FILTER AIR CLEANER



Designed for easy installation in *any* winter or summer air conditioning system, the new Magne-filter Air Cleaner is a dry type electronic air filter that traps even the smallest dirt particles. Automatically cleaning the air by electrical attraction, the Magne-filter effectively removes pollen, air-borne bacteria, dust, and smoke. The Magne-filter is designed to be installed in the return duct of the air conditioning system, and can be installed on its side in limited space applications.

THE MAYFAIR SUMMER AIR CONDITIONER

Here is the newest in summer air conditioning for small and medium homes. The new Mayfair Summer Air Conditioner connects to the duct work of existing forced warm air heating systems. Handily controlled by a switch, it mechanically cools and dehumidifies the air. And because it has a hermetically sealed, factory-tested cooling system, the Mayfair is as simple in operation as a modern refrigerator! When installed with an American-Standard warm air heating unit, the Mayfair provides year 'round residential air conditioning at its best.



For free literature on these two new products, contact the American-Standard sales office serving you or write to **American Radiator & Standard Sanitary Corporation,** P. O. Box 1226, Pittsburgh 30, Pa.

AMERICAN-Standard

First in heating . . . first in plumbing

ing home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

Immediate delivery assured

SUN-SASH LOUVERED WINDOWS



And they cost less!

- **AVAILABLE** — unaffected by curtailments or shortages
- **COST LESS** than most other windows — $3.90 to $13.90
- **BEAUTIFUL** — lend themselves to any interior decor
- **EASILY INSTALLED** — even by inexperienced amateurs
- **DRAFTLESS** — ventilation regulated
- **PROVEN**—over a million installations in the last 20 years
- **SIMPLE OPERATION**—finger-tip lever

Specify SUN-SASH for

HOMES • OFFICES • FACTORIES • SCHOOLS
HOSPITALS • INTERIOR PARTITIONS
PORCH ENCLOSURES • BREEZEWAYS

Send for the amazing SUN-SASH STORY

SUN-SASH COMPANY
38 Park Row, New York 7, N.Y.

Name

Address

City Zone State

Occupation

DEFENSE HOUSING

grant population probably equals Canada's total population, can always make good use of any inventory of portable houses. (Incidentally, National Security Resources Board has suggested that a strategic supply of portable housing be available for use in bombed-out areas.)

So far, the U. S. has not developed a readily portable house—that is, one that is self-sufficient. There are a number of good portable house-shell systems but none which answers the more stickling problem of eliminating utility connections. The present portables all require almost as much site preparation as permanent housing.

Here is a challenge for housing technology and it is no accident that a solution has been pointed out by that good crusader for better housing, Buckminster Fuller. Bucky Fuller's solution is a real stemwinder. He is developing a low cost plastic demountable unit which among its other virtues, will need no utility connections. Water will be drawn from the air, heat from the ground. Sewage is handled chemically and electricity is generated by a built-in power unit. As usual, there is nothing wrong with Fuller's ideas except that they clash head-on with so many cherished ideas on how to build a house.

However, the private building industry will do well to study Fuller's ideas on making portable houses really portable. The alternative may be another batch of "temporaries" which are so rooted in the ground by expensive utilities that they won't be moved.

In a sense the World War II program was forced into the stop-gap construction of "temporaries" by two earlier mistakes: 1) delay in formulating the over-all defense housing program and 2) failure to stock pile prefabricated houses pending a decision as to where to put them. Today, even though the defense housing program has not yet crystalized, it's none too early to put the house prefabers to work and thus avoid the later need for quick, flimsy, temporary construction.

Lesson No. 4. The shrinkage in house sizes should be checked

Most unfortunate aspect of World War II housing was the shrinkage which took place in the size of the average U. S. house. Before the war, few houses were built under 1,000 sq. ft. Recently, FHA announced that the median size of *all* the houses whose mortgages it was insuring was 840 sq. ft. By American Public Health Association standards, this makes practically all FHA houses substandard, since the APHA minimum space

(Continued on page 195)

CEIL-HEAT
ELECTRIC RADIANT CEILING CABLES
SO EASY TO Install!



MR. R. M. CONDRA
Contractor-Engineer
Nashville, Tenn.

"Before we knew it, Ceil Heat was installed and the plastering was done in our 48-unit Skyline Apartments, completed last year. The installation costs were equal to or less than other types of heating equipment—and comments from occupants have been extremely gratifying."

THERE is no faster, or cheaper method of installing a complete modern heating plant to furnish maximum comfort and convenience, than with Ceil Heat. Now, everyone can enjoy carefree, automatic heat with the revolutionary electrical ceiling cables that provide *invisible* radiant heat from above—just like the sun.

THOUSANDS OF USERS—In Tennessee and nearby states where Ceil Heat was first installed users report that it has withstood the severest winter of a lifetime—has kept their homes cozy-warm even on the coldest days.

NEW FREEDOM OF DESIGN—Ceil Heat makes it easier for architects to design more beautiful, more efficient homes by utilizing space formerly needed for registers, radiators, pipes, furnace, fuel storage, and cellar.

EASY TO ESTIMATE • EASY TO INSTALL—Just staple the cable to the ceiling base according to simple Ceil Heat engineering directions, and cover with plaster. Quickly installed by a local electrical contractor. Simple to calculate heat loss and cable required.

SAFE—Invisible Ceil Heat is out of reach of fingers, furniture and drapes, yet it keeps floors toasty warm. Its low temperature makes it the safest heating system from standpoint of fire, burns or explosions.

TROUBLE FREE—Ceil Heat is waterproof, non-corrosive—nothing to get out of order. Fully acceptable for FHA financing, G.I. insured loans, etc.

CEIL HEAT IS THE STANDARD — Radiant ceiling heating is now used in homes from coast to coast. There is no finer system for uniform, low-cost carefree warmth. And, Ceil Heat sets the standard. Perfected solely by Ceil Heat Div., Homes, Inc. Sold only through electrical distributors to approved licensed electrical installers.

CEIL HEAT
HEATS LIKE THE SUN

Limited FRANCHISE areas available. Write today.

CEIL HEAT Division, Homes, Inc., Dept. M.B.3
P. O. Box 1167, Knoxville, Tennessee.

Please send me—without obligation—complete literature on Ceil Heat

NAME_____
FIRM_____
ADDRESS_____
CITY_____ ZONE_____ STATE_____

© H. I. 1951

Specify protection in mobilization construction

Industrial construction for mobilization will give longer, more dependable service if you specify the *protection* of Monsanto Penta for the lumber you employ.

Monsanto Penta (pentachlorophenol) protects against termites and other wood-boring insects and controls decay caused by fungi. Treated with properly formulated Monsanto Penta, wood can be painted or varnished.

Write for details on *how to specify* penta treatment for lumber . . . for names of companies that can supply material treated with Monsanto Penta . . . for firms able to custom-treat your lumber . . . for brands of formulations with which you can do your own treating effectively. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

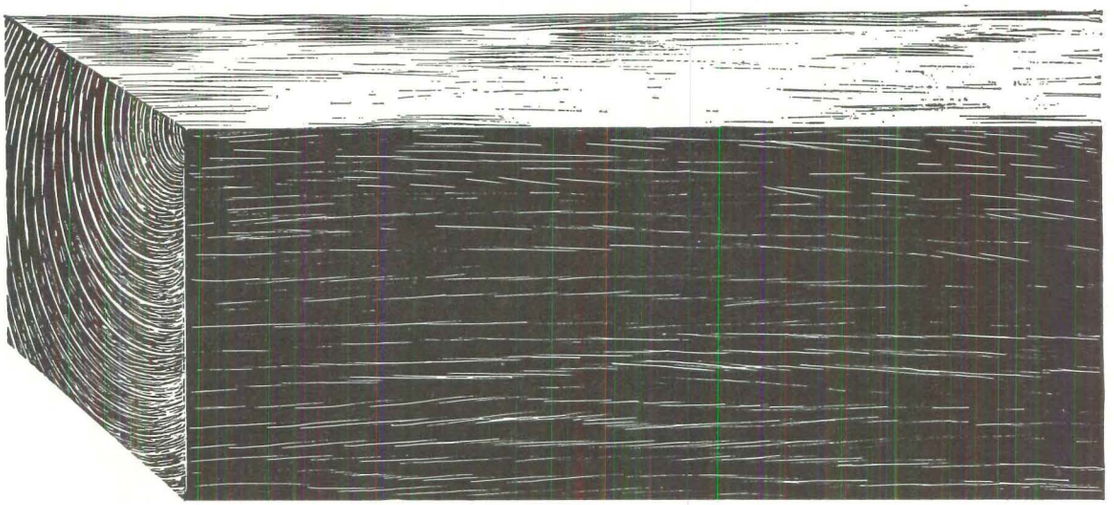
DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

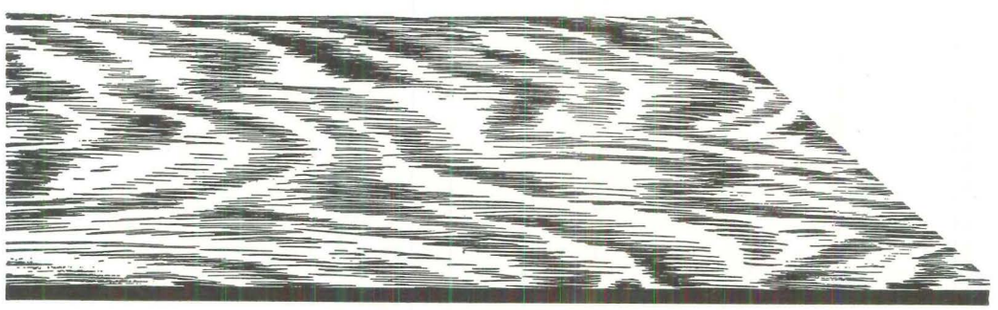
Typical uses of penta-treated wood

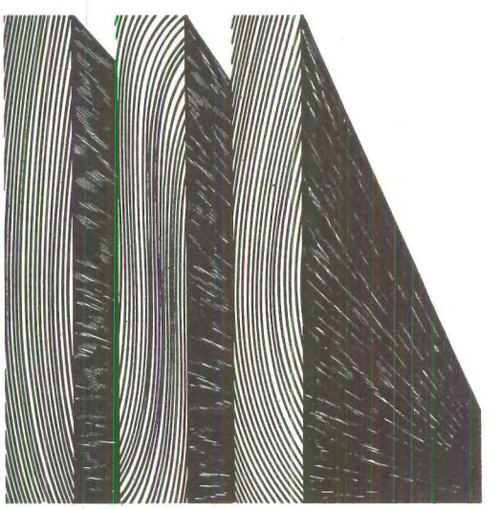
Wherever wood is used, penta treatment will give it longer life. The following table gives the amount of 5% penta solution in oil that a cubic foot of wood should retain for maximum protection.

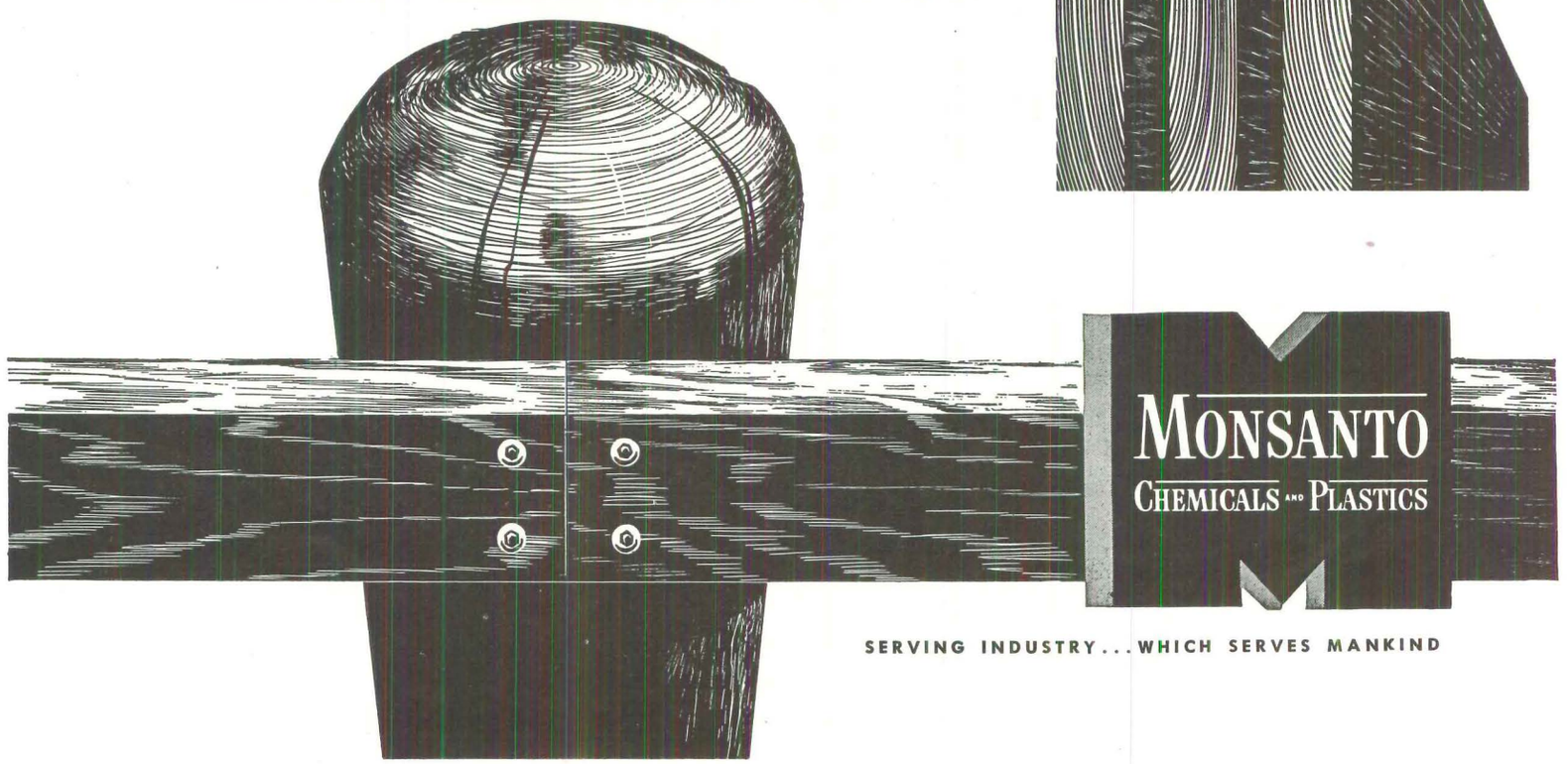
	Humidity average to low	Humidity average high
Sills and plates	6	8
Joists and girders	6	8
Screeds and subflooring	6	8
Factory flooring	6	8
Roof plank	6	8
Platforms and decking	6	8
Posts and fences	6	8
Cooling towers	..	8-10
Sign material	6	8
Millwork	6	8
Highway guardrails	6	8
Railway cars	6	8
Bridge timbers	8	10-12
Utility poles	8	8-10
Crossarms	6	8

Note: Higher treatments are recommended where wood is to serve under severe conditions, such as in the tropics. Recommendations will be furnished on request.









MONSANTO
CHEMICALS AND PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

NEW A.C.I. BUILDING CODE...

Recognizes the Advantages of the A305 Reinforcing Bar



The revised "Building Code Requirements for Reinforced Concrete" has now been formally ratified by the American Concrete Institute.

This new code contains some of the most important changes made in many years. These changes were made possible by the new A305 reinforcing bar. By using A305 bars under the new code, you get better, more economical structures.

WHAT ABOUT YOUR LOCAL CODE?

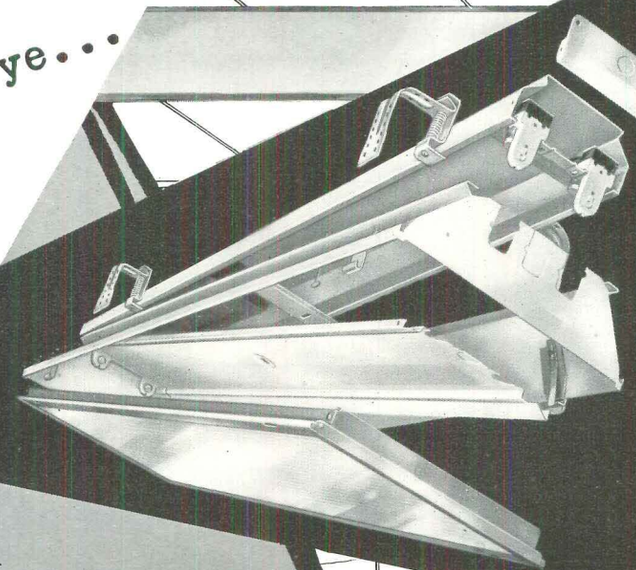
To participate in the benefits offered by the new A.C.I. Building Code, your local code must be changed to conform. Take action, now, to see that your local code is changed!

Copies of the new A.C.I. Code may be obtained, for a small charge, from the **American Concrete Institute, 18263 W. McNichols Rd., Detroit 19, Mich.**

- **INCREASES ALLOWABLE BOND STRESSES**
- **ELIMINATES HOOK ANCHORAGE**

CONCRETE REINFORCING STEEL INSTITUTE • 38 S. Dearborn St., Chicago 3

there's more to recessed lighting than meets the eye...



Smithcraft TROFFER

Here's a recessed fluorescent fixture that's as highly acclaimed for its mechanical superiority as for its unsurpassed light distribution. We'd like to show you just a few of the reasons why:

First, Smithcraft Troffers can be installed in virtually any ceiling construction. All units are exactly 12" in width, and 24", 48", 72" or 96" in length to conform to modular ceiling requirements. Bi-Pin or Slimline lamps may be used.

The above "exploded" photographic view of the troffer explains the speed and ease of installation that is an important feature in Smithcraft Troffers. Patented Aligner Hangers eliminate costly careful dimensioning throughout installation procedure. You can always "get inside" the troffer for servicing, too, without disturbing adjoining ceiling panels.

Any type of shielding — from steel louver to glass or lens — may be specified. Louvers can be hinged open from either side. Envelope-type frames "cushion" the glass from shock or rattle, as well as minimize possibility of breakage.

Yes, there is more to good lighting than meets the eye. And there's far more to the Smithcraft Troffer than space permits us to explain here. We'll be glad to fill in the details. Send for the booklet "Architectural Troffers" today!

We'd like to send you our popular monthly house organ "The Light Side of the News". Drop us a line . . . we'll do the rest. We'll be glad, too, to send you a complete Smithcraft Catalog upon request.

America's finest fluorescent fixtures for offices that run the nation's industries...

Smithcraft

LIGHTING DIVISION

CHELSEA 50, MASSACHUSETTS

New Vistas . . .

Wakefield CEILING

a means of providing total luminous-acoustical environments

Practical, simple, tested, wholly integrated, the Wakefield Ceiling completely answers the requirements for ideal lighting and effective sound deadening in rooms where continuous and absorbing tasks are performed.

The lamps are completely hidden from view and the apparent light source is the Plexiglas "ceiling" which constitutes a diffuse surface of large area and low brightness. Where wall, floor and furniture reflectances are relatively high, the 3 to 1 contrast criteria of the Illuminating Engineering Society are easily met and often bettered. Almost perfect glare-and-shadow-free seeing conditions are obtained. Acoustical baffles, which are optional, are suspended below the plastic, and tests show their efficiency to be equal to or better than that of conventional sound absorption treatments. All structural and electrical elements are simple, uniform, economical and installable in their entirety by an electrical contractor licensed by Wakefield.

The Wakefield Ceiling opens new vistas to all those concerned with specifying and providing perfect audio-visual environments.

See the Wakefield Ceiling
Booth 18, A. I. A. Convention

Edgewater Beach Hotel, Chicago
May 8-11



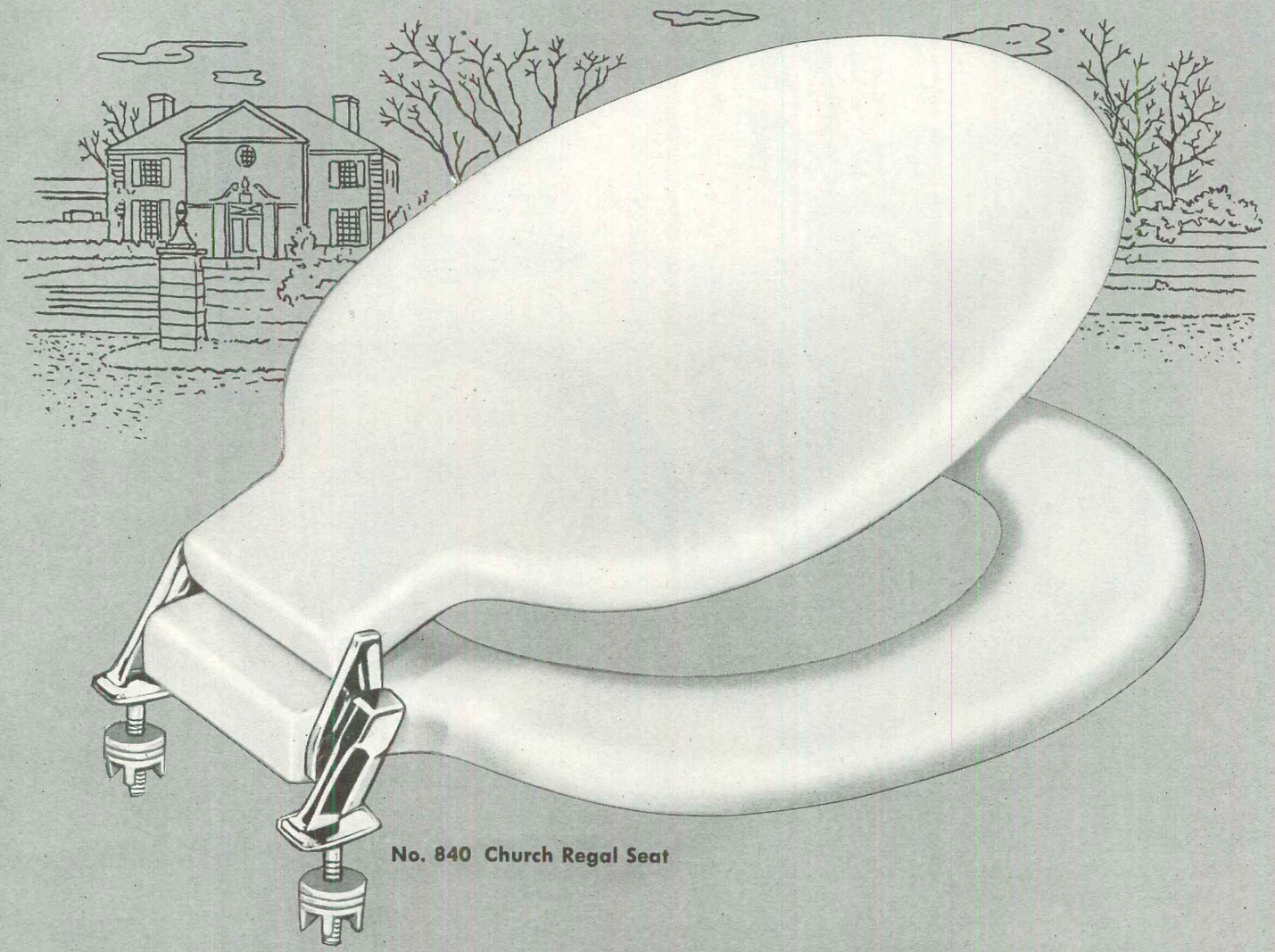
Now on the press, a descriptive booklet on the Wakefield Ceiling.

For your copy write to The F. W. Wakefield Brass Company, Vermilion, Ohio

Wakefield CEILING

The F. W. Wakefield Brass Company
Vermilion, Ohio

Obvious Quality



No. 840 Church Regal Seat

Whatever the budget, most clients want — most architects specify — Church Seats. Their quality is as obvious as their good looks. And in cost per year of satisfactory service, they are truly economical.

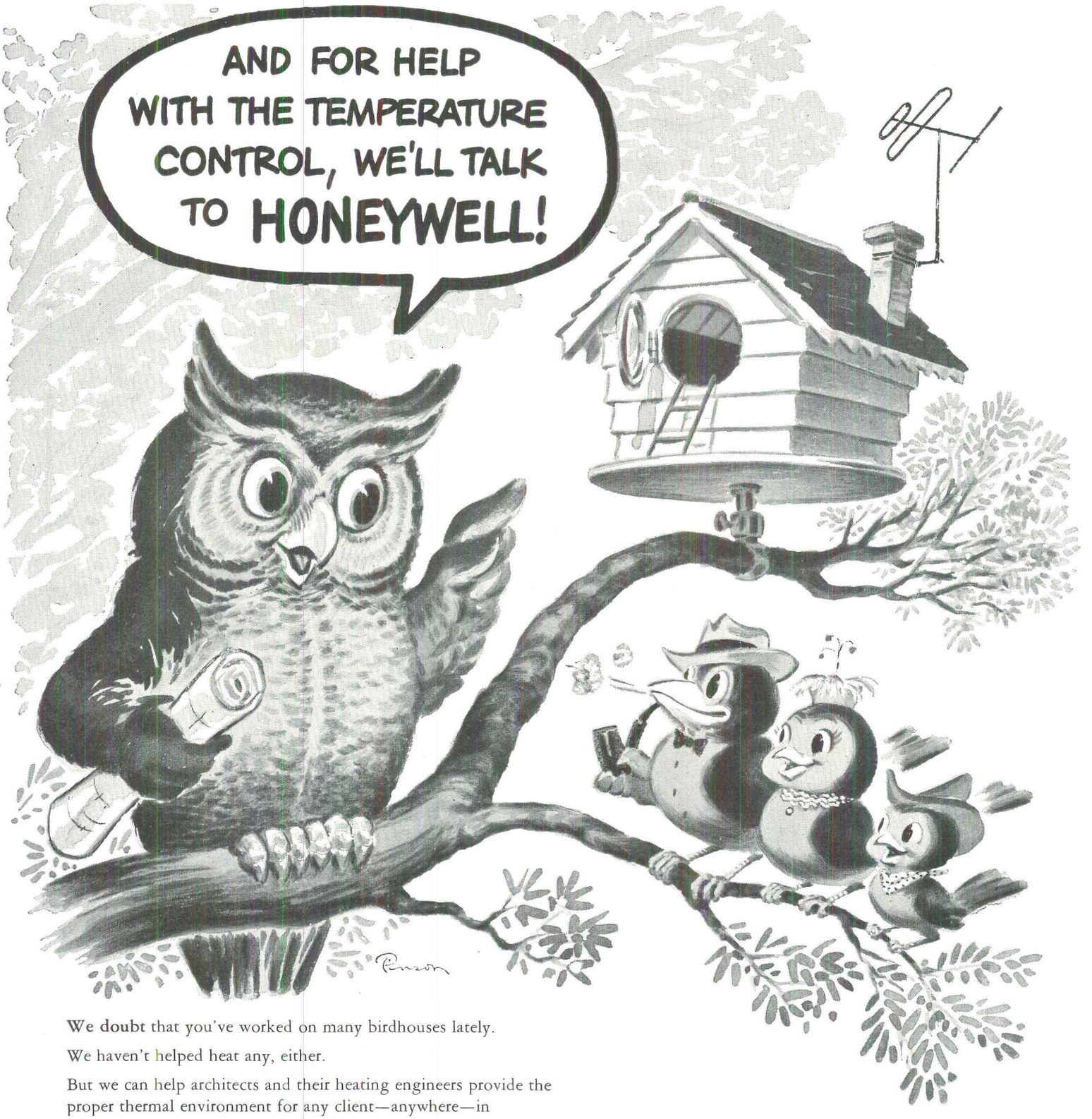
Church Seats

"THE BEST SEAT IN THE HOUSE"

C. F. CHURCH MFG. CO., HOLYOKE, MASS.

Division of American Radiator & Standard Sanitary Corporation

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON



We doubt that you've worked on many birdhouses lately.

We haven't helped heat any, either.

But we can help architects and their heating engineers provide the proper thermal environment for any client—anywhere—in any kind of structure.

We have a lot of literature on the automatic control of all phases of heating, ventilating and air conditioning. Information you should have in your files.

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requirement for a family of four persons is 1,150 sq. ft.

The shrinkage in house size has been defended on several counts. First is that building prices have more than doubled. Second is that many materials have been in short supply during a good part of the past decade. Finally, it is argued that builders have been able to sell in low income brackets because their houses are smaller.

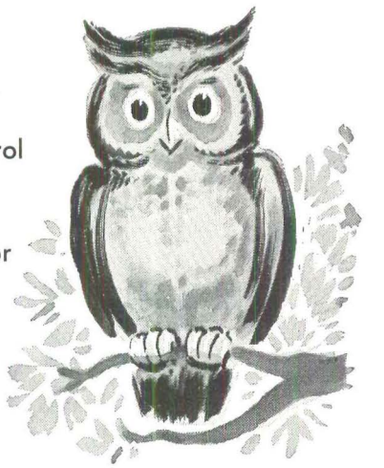
All of these explanations beg the essential point, however. The plain fact is that both the building industry and FHA acted neither too wisely nor too well in reducing house sizes. In the face of materials shortages and price rises, they took the easy road. Instead of looking for alternatives — notably, more efficient use of the materials that were available—they simply reduced the scale of their houses. The loser, as usual, was the housebuyer. Except for the highest price brackets, he had to choose between cramped house and no house at all.

Nothing can be done about the tiny houses which have already been built. But something must be done about re-directing the still-powerful trend towards smaller houses. A concerted, intelligent attack on the problem by industry and government can do it. The theme for the attack was set in January by the Round Table on housebuilding sponsored by THE MAGAZINE OF BUILDING. In their report, the Round Table's experts declared: "The only alternative to a drastic reduction in the American standard of living is a still more drastic reduction in the American standard of waste." By checking waste in house construction, the Round Table estimated that between 20% and 40% saving could be made in labor, materials and dollars. With these savings the industry should not only be able to check the trend towards smaller houses but also open the possibility of making houses relatively larger than they are now. And (important point) it could be done without imposing on the supply of vital materials.

The wide powers that NPA has over materials control should be used to hasten the day. In World War II, the War Production Board used similar powers in a limited way to conserve materials in housing. The trouble was that it assigned an inventory of materials to each house built but it didn't police its use. To save money, the builders made their houses smaller. WPB was more strict with the materials that went into the temporary buildings put up by the Federal Public Housing Administration. After Pearl Harbor, FPHA buildings averaged only 2,500 lbs. of ferrous and 130 lbs. of other metals per fam-

(Continued on page 200)

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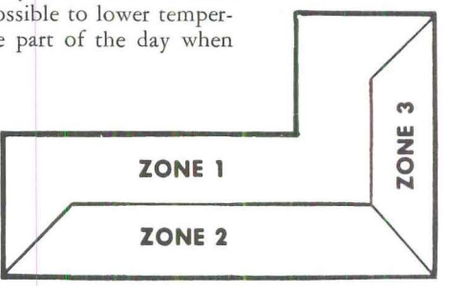
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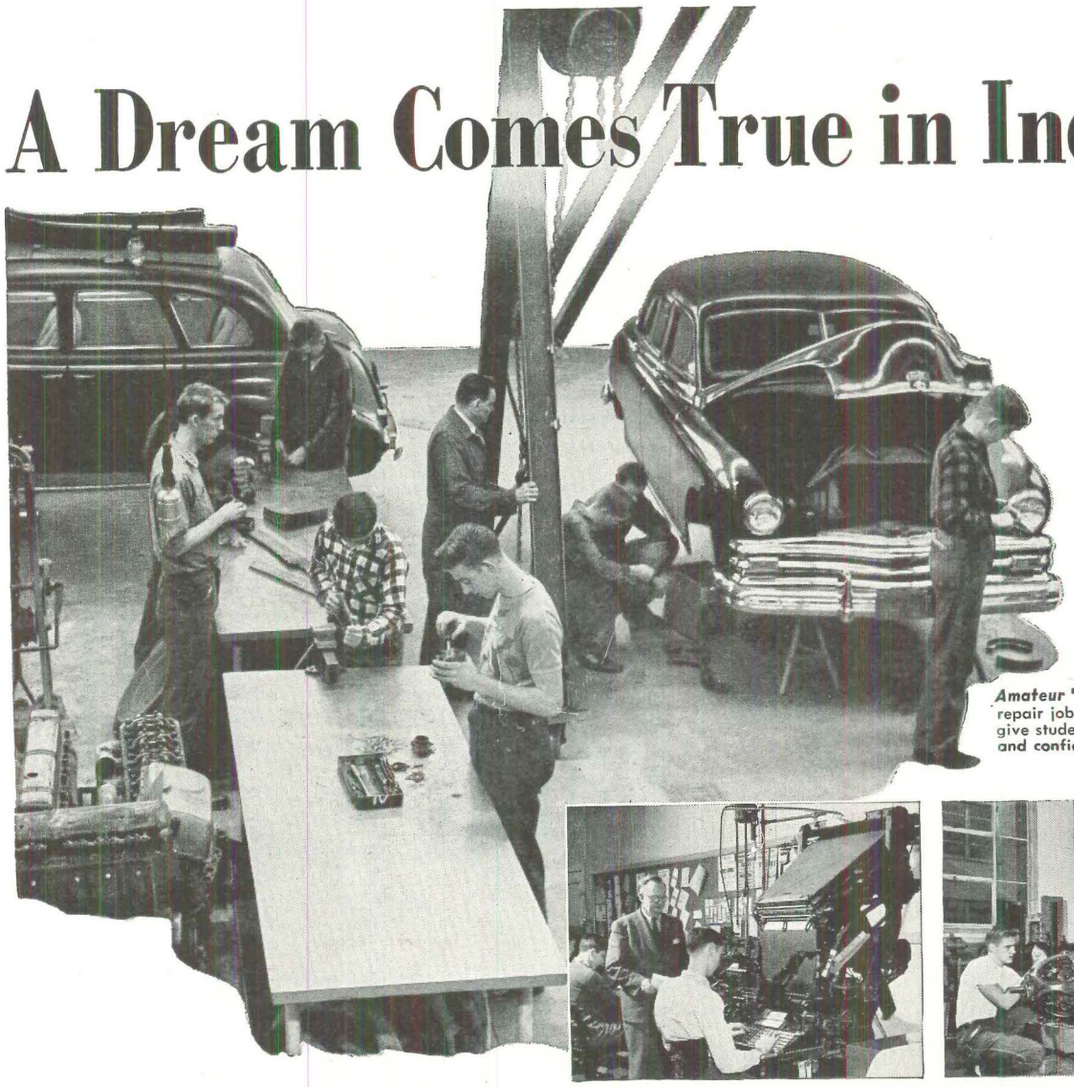
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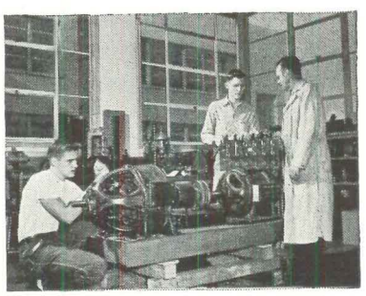
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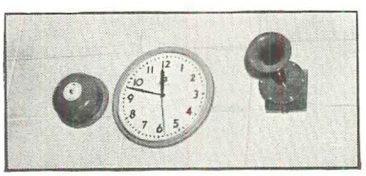


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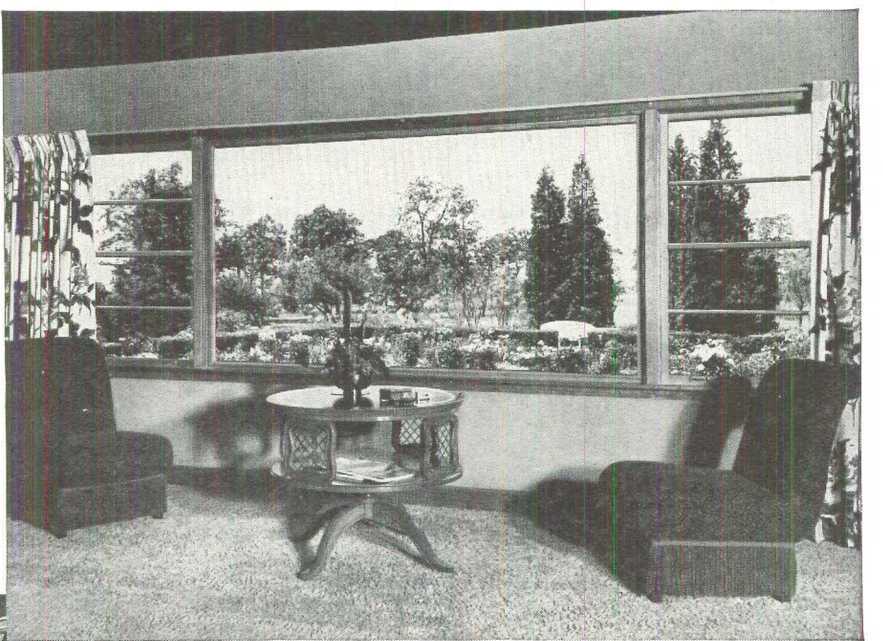
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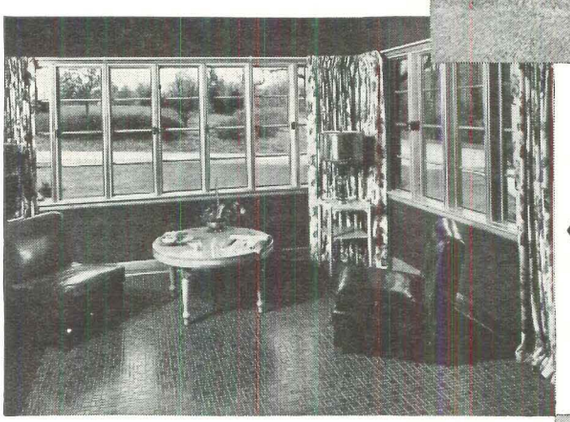
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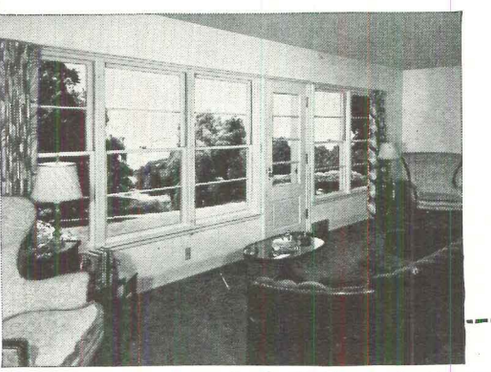
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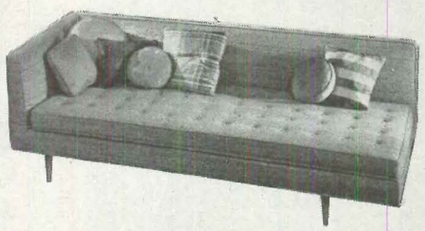
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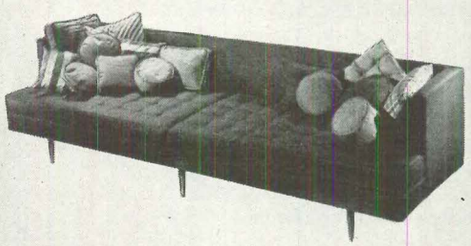
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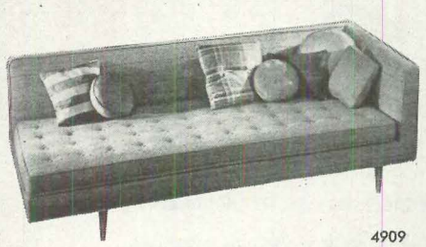
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ily unit, compared to the pre-war average of 9,300 and 414 lbs., respectively. This was drastic cutting; quality was sacrificed but the experience suggests that we could well build our houses with few less materials than we now use.

With the enforcement of a materials conservation program FHA might well consider establishing a national space minima for the houses it insures. A good starting figure —although inadequate in many respects— would be 800 sq. ft. There would be, of course, screaming protests from the builders of smaller houses. They will argue that this move will freeze out the whole lower income market. However, with the materials savings program, plus competition, the price structure would adjust itself to the change within a short time. The 800 sq. ft. minimum would, of course, force builders of larger houses to upgrade their space standards. The penalty for non-compliance would be a simple, effective one: no FHA mortgage insurance or VA loan guarantees.

Lesson No. 5. Defense housing should be no excuse for lowering design standards

The reduction in house space standards during the last war was only one manifestation of the general inclination to relax living standards in the name of "war housing." Most of the housing was pitched to a dead-level design mediocrity that has been hard to dislodge since then. Partly this was the fault of builders who knew that they could sell anything they built. Partly it was the fault of FHA for not continuing its early good work in lifting small-house standards. And the architects themselves did nothing to remedy the situation.

There are some compelling reasons why this trend should not be repeated during the current mobilization. One is the need for applying the lessons of better design towards the problem of saving vital materials. Another reason involves the much-discussed U. S. standard of living. Defense Mobilizer Charles Wilson has advanced the challenging proposition that we can actually raise our living standards while we arm ourselves and the rest of the free world. Applied to housing, this means a continuing improvement in livability standards. It is no longer enough that we provide leakproof shelter for everyone: the new goal must be a house that meets the requirements of gracious living.

The AIA-NAHB joint committee on improving small house design would do well to take this challenge and apply it directly *now* to the problem of defense housing design.

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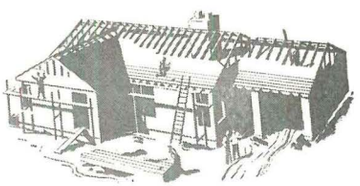
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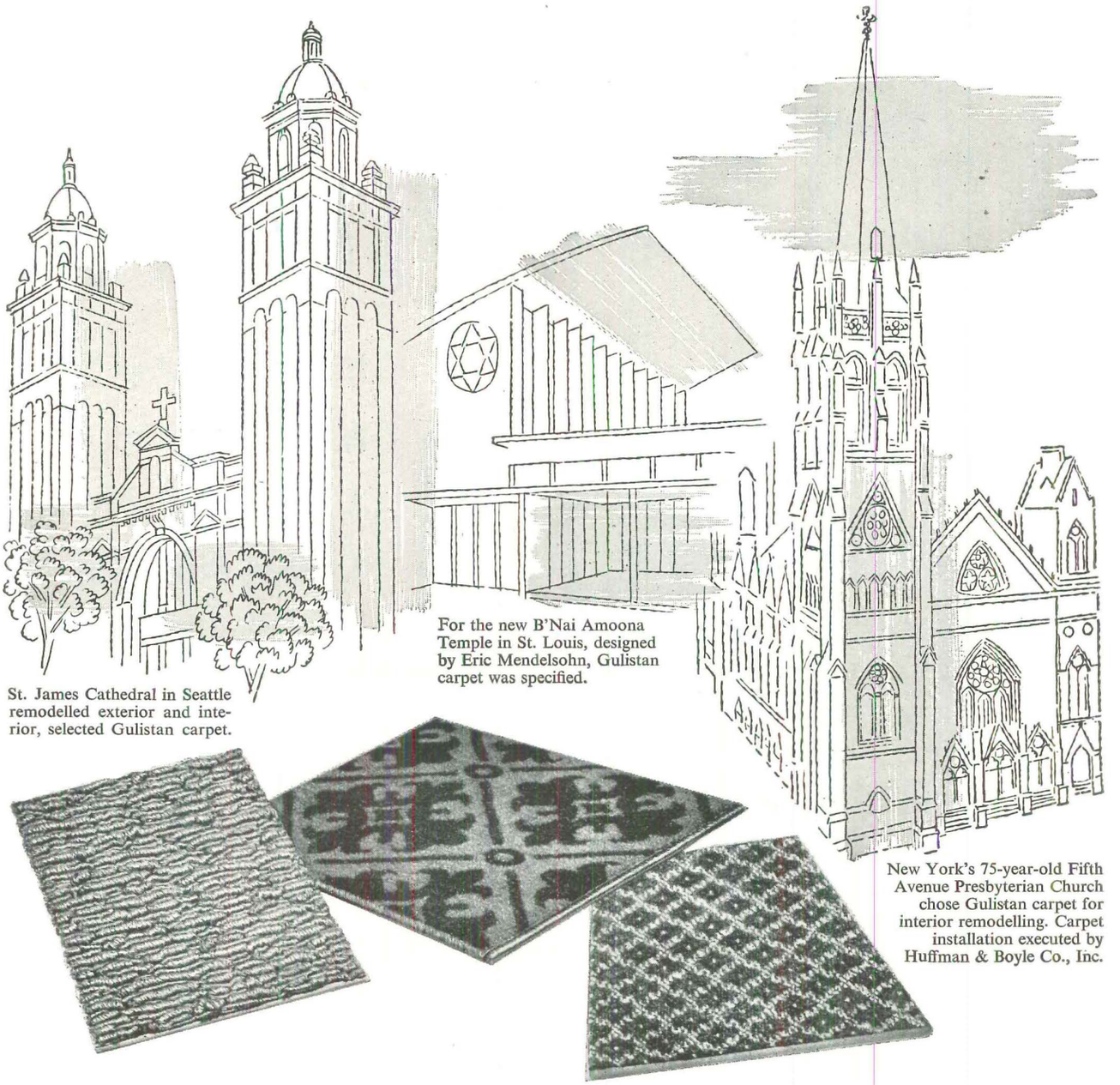
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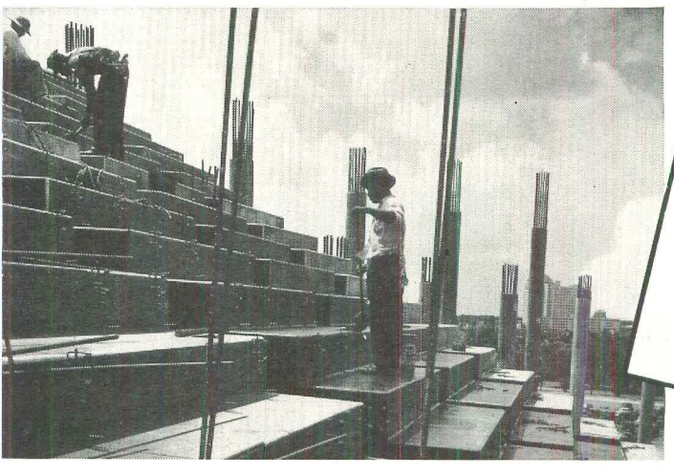


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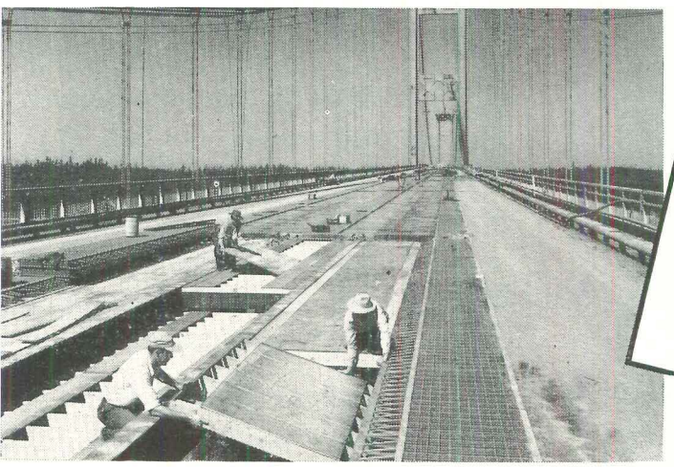
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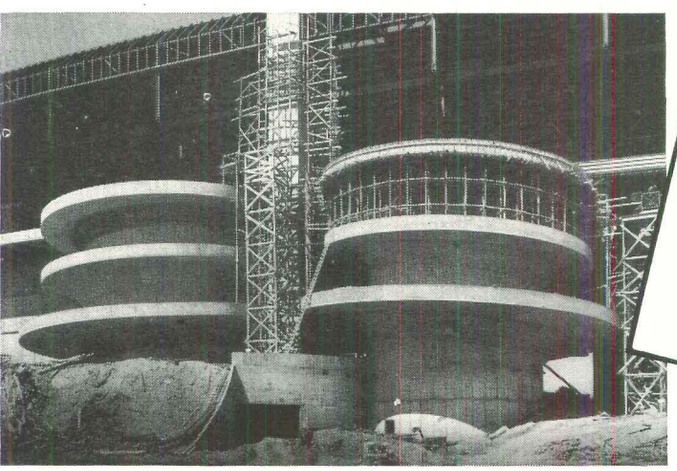
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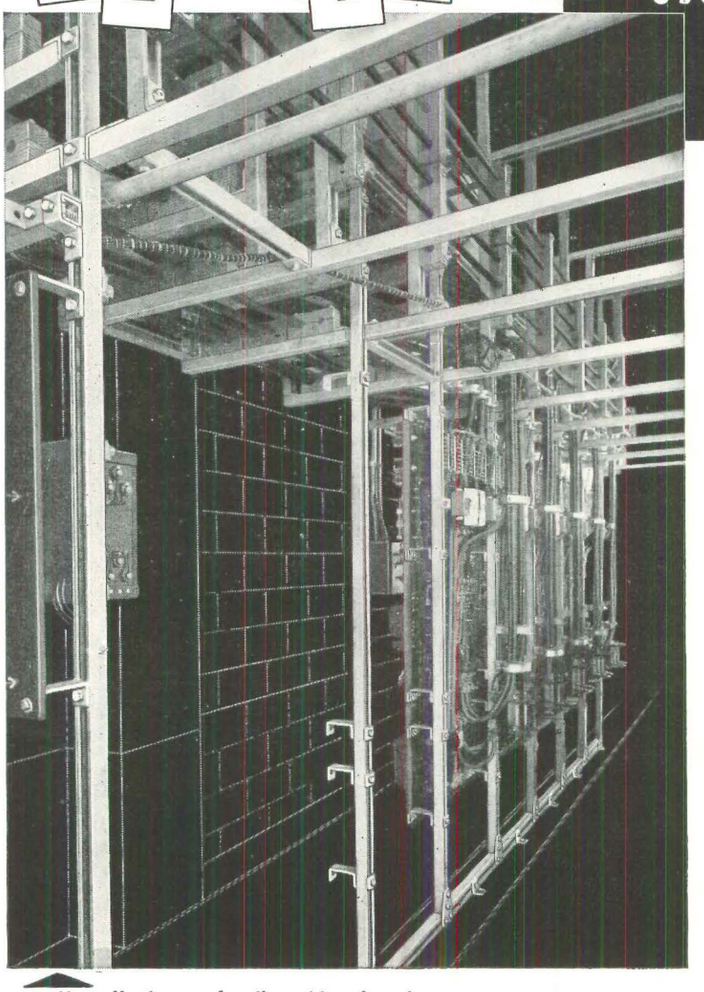
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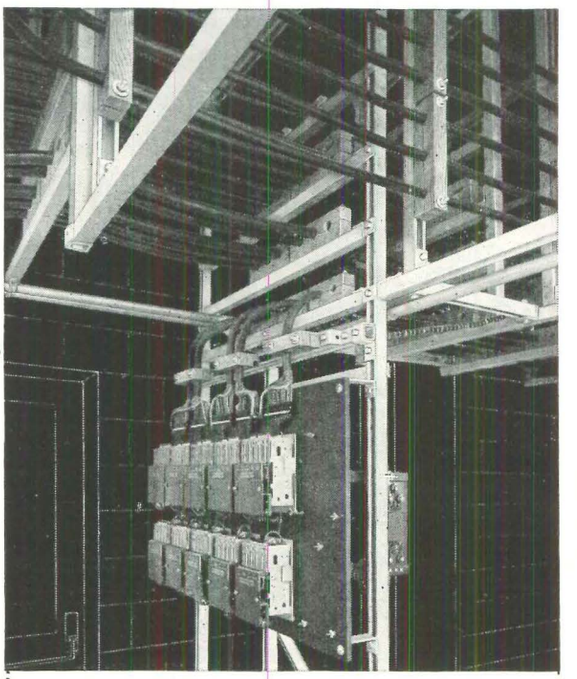
All Cable, Switchboards and Timer Control Panels Supported by Completely Adjustable Unistrut Framework



Note effective use of easily positioned maple cable clamps mounted on Unistrut channel.

These pictures show how Unistrut channel and fittings, with maple and porcelain insulators, combine to support all control equipment for the motors that operate centrifuges in one step of the sugar refining process at the Chalmette, Louisiana plant of the American Sugar Refining Company.

Unistrut permitted fast, on-the-job framing assembly where all adjustments were quickly made by merely loosening a bolt, and where supporting members were added as the work progressed. Because no drilling, welding, special tools or equipment are required to assemble Unistrut, engineering detailing and construction time were kept to a minimum. Another advantage lies in Unistrut's built-in flexibility which makes possible later changes and additions to the existing structure.



Installation is equipped throughout with Unistrut for the support of all motor control apparatus and cable.

With Unistrut you can build all types of framing, mounts, shelving, racks, tables and benches—conduit, cable, pipe and tubing hangers and supports, fluorescent fixture supports, and many other structures with just a hacksaw and a wrench. Give Unistrut a trial in your business.

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Write for your copy of 24-page Construction Catalog No. 500, 24" x 36" Wall Chart and sample of Unistrut.



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☐ Catalog No. 500 ☐ Wall Chart ☐ Unistrut Sample

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Company_____

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(Continued from page 157)

a static pressure regulator that controls four 5,500 cfm ventilators in the roof of the hot area. One or more of these automatically go into operation if the differential pressure between the hot and cold areas falls below a fixed setting. There are no windows in the hot area, and normally doors are kept closed.

Ventilation in the hot area

All exhaust air from the hot area is divided into acid or non-acid types. Acid air is put through a group of caustic scrubbing towers, then through two CWS filters in parallel and drawn through an underground 14″ stainless steel duct to a fan house 250′ away at the base of a large 325′ stack which carries off air used to cool the Brookhaven reactor. There acid air is forced up a 14″ stainless steel duct within the large stack and exhausted at the top.

Non-acid exhaust air is cleaned in CWS filters, carried through a 36″ underground precast concrete pipe to the fan house and forced into the large stack.

The entire hot area is supplied with conditioned air kept at 70° in winter with 35% relative humidity, and from 72 to 80° in summer with 50% relative humidity. A 200 ton centrifugal compressor provides chilled water for air cooling.

One unit delivers 15,500 cfm to the big room in general and a second unit delivers approximately 5,000 cfm to four zones within the room:

A. Semi-hot cells (1,500 cfm), tube room (100)
B. Corridor of semi-hot cells (1,200)
C. Four dismantling & repair rooms, plus hot storage room (1,020 total)
D. Decontamination area (1,200)

Hot cells: when hot cells are in operation, 30 cfm are drawn in from the room and are exhausted into a 4″ stainless steel drain and drawn to caustic scrubber towers where radio-active iodine is removed and acid gasses are neutralized. This air then is drawn through the stainless steel pipe and exhausted through the large stack.

Semi-hot cells: these caves or benches have a double exhaust system. Most of the air is drawn from each cell at a rate of 1,200 cfm over the hood by a 2 h.p. centrifugal blower in a fan corridor along the back. Air is filtered and discharged into the non-acid duct. The second system takes 40 cfm through a 3″ stainless steel drain into which equipment vent lines are run. This draws off the hottest air from the table. This air tends to be the most contaminated and is scrubbed, filtered and treated as air from the hot cells.

Semi-works area: in this open area there are eight stations for setting up apparatus. Each is complete with utilities, several drains and two exhaust ducts. Like the semi-hot cells, each can exhaust 1,200 cfm of non-acid air that is put through filters, and a second exhaust system takes care of acid air carried off through a 4″ stainless steel duct.

Dismantling and decontamination rooms: these several rooms are ventilated through the non-acid system.

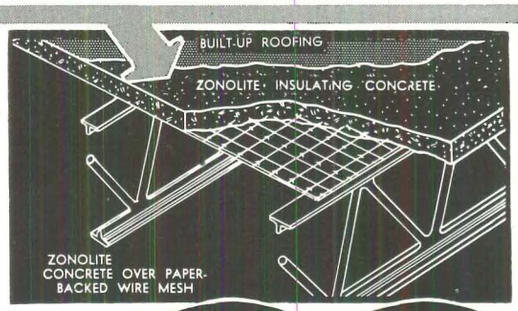
Waste treatment area: is under the floor and is supplied with 3,700 cfm of unconditioned air which is kept at 70° in winter and outdoor temperatures in summer. It is drawn through the tank cells from the coldest to the hottest areas and most goes into the non-acid system. All the tanks and most of the drain lines are exhausted through the scrubber towers into the acid system.

In the fan house at the base of the large stack is a 50 kw emergency gasoline engine generator that could supply power to fans during a power failure.

What it cost

Total cost of the hot lab complex with its extensive plumbing, tank farm, exterior fan house and other auxiliary equipment was $2.7 million. This amounts to $77 per sq. ft. for the 35,200 sq. ft. of usable floor space. Typical analytical laboratories cost around $35 per sq. ft. and the difference is a measure of the complexity of the Brookhaven structure.

Combine Roof Deck and Insulation—in One Operation



Construction details of the H. L. Green Dept. Store roof in Columbus, Ohio. Paper backed wire mesh was laid across the structural members and 3″ of Zonolite vermiculite concrete poured over it. No other reinforcing was required.

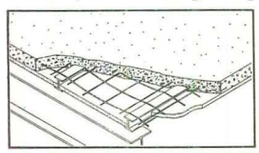


Build Lightweight Lifetime Roofs With ZONOLITE® Insulating Concrete!

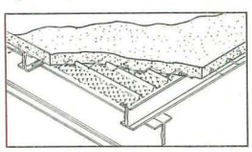
Combine *two* operations in *one* on your next roof deck by building insulation *right into the roof itself.* Zonolite concrete combines roof deck and insulation in one operation, permitting major savings in time and labor. Made with lightweight Zonolite vermiculite aggregate, this insulating concrete contains millions of tiny air cells which offer tremendous resistance to the passage of heat and sound. Zonolite concrete weighs between 25 and 35 lbs., or only about ⅙ as much as sand-and-gravel concrete. This amazing saving in weight makes possible additional economies in structural steel and other critical materials. Equally important, Zonolite roofs are unaffected by water, vermin, fungus, heat or fire . . . once installed they last the life of the building.

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Zonolite concrete over fiber or gypsum board forms.



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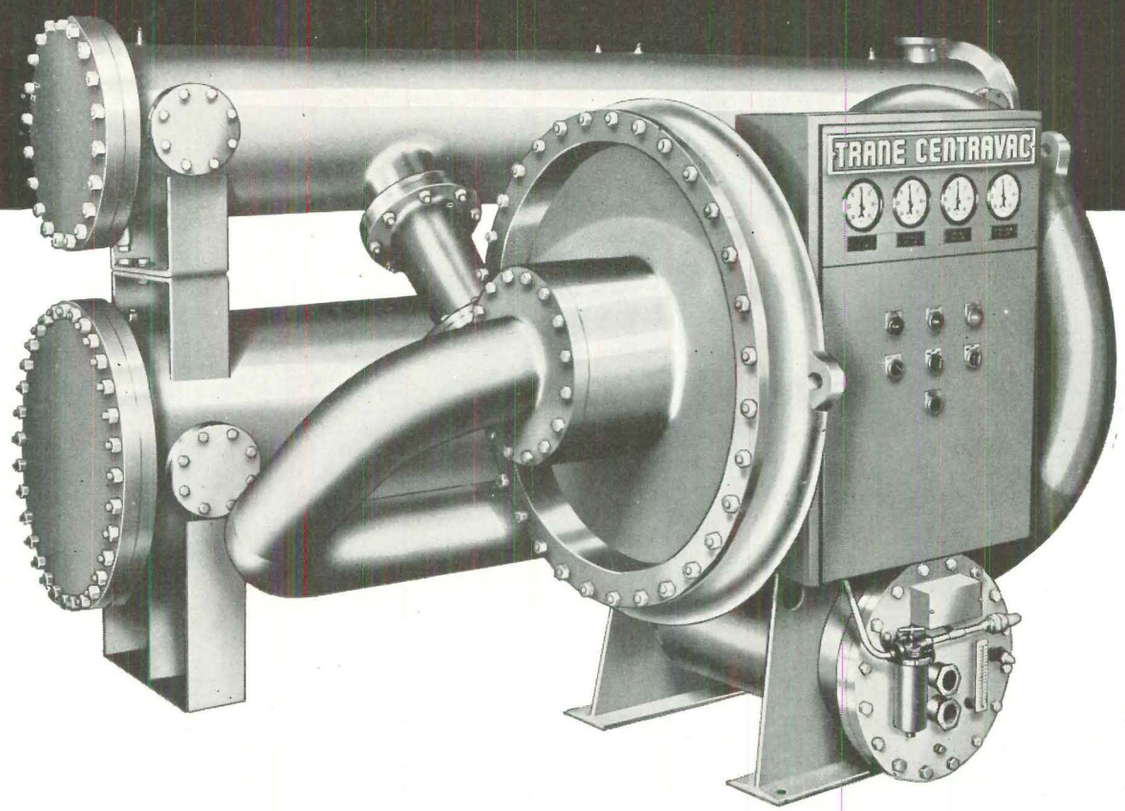
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Complete centrifugal refrigeration unit cuts costs four ways

The CenTraVac is a new kind of centrifugal . . . hermetically sealed direct drive . . . with stable operation from 100% down to 10% of rated capacity . . . with efficient operation on reduced loads.

Power Saved on Reduced Loads!

CenTraVac has *built-in* capacity control. Horsepower saving runs parallel to capacity reduction over wide operating range. Owner pays only for chilled water actually used.

Simplified Installation Slashes Costs!

Compact, lightweight, vibration-free CenTraVac can be mounted anywhere from basement to penthouse without special foundation. One hermetically sealed unit is a complete chilled water refrigeration system. One wiring job—one set of connections—one system of controls.

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Designed to run without special attention, CenTraVacs are simple to turn on or off—or may be run continuously season after season. Unit has only two main bearings, force-feed oiled; direct connected water-cooled motor in hermetically sealed compressor eliminates gear boxes, shaft seals and similar devices, resulting in a machine that minimizes maintenance time and expense.

High Efficiency Means Low Cost Cooling!

CenTraVacs are designed to deliver over a ton of refrigeration per horsepower. Efficient on small as well as large jobs. Five models—45 through 190 tons.

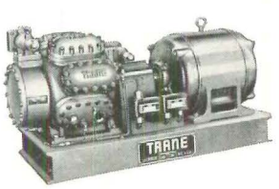
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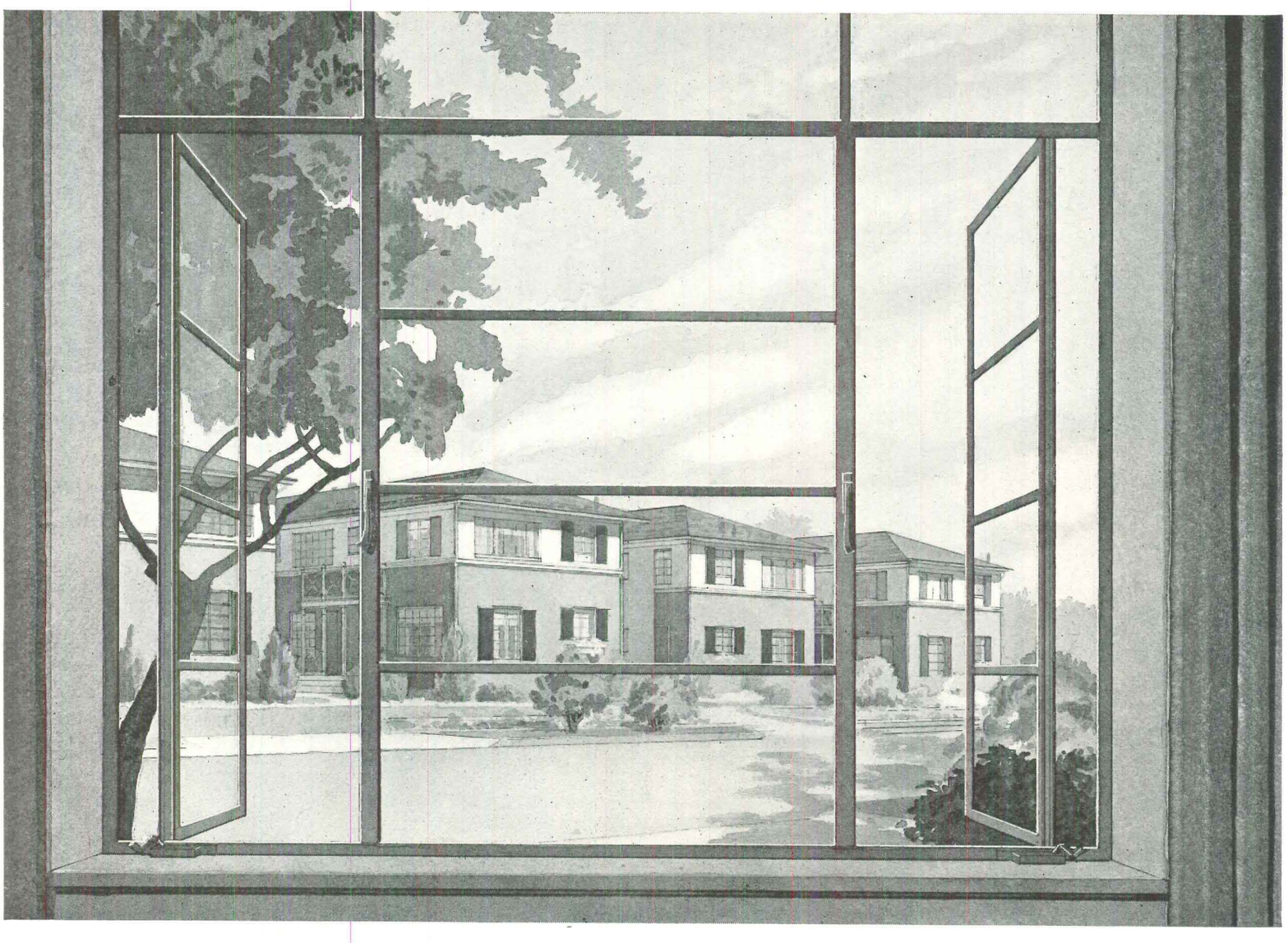
New, 1951 S. C. Air Conditioner packs more cooling in less space. See Bulletin S-362.



Brand-New, All-New Trane Reciprocating Compressors and Condensing Units . . . Trane-designed and Trane-built, 10 to 50 tons, for higher efficiency . . . smoother running . . . longer life. Bulletin DS-361.

Ask the Trane representative in your area—or write The Trane Company, La Crosse, Wis., for Bulletin S-399.





Apartments in Glendale, Calif. Owner: Melrose Development Corporation. Architect & Builder: Causey & Rhodes, Glendale, Calif.

The high durability and low maintenance cost of Lupton Metal Windows mean more today than ever before. Lupton Windows are built to last. Sturdy metal frames are precision-built at every point — cannot warp, swell or shrink.

Slim-frame Lupton Metal Windows harmonize with contemporary or traditional design. Provide abundant daylighting, controlled draftless ventilation. Lupton Casements have extended hinges to permit cleaning both sides of glass from inside the room.

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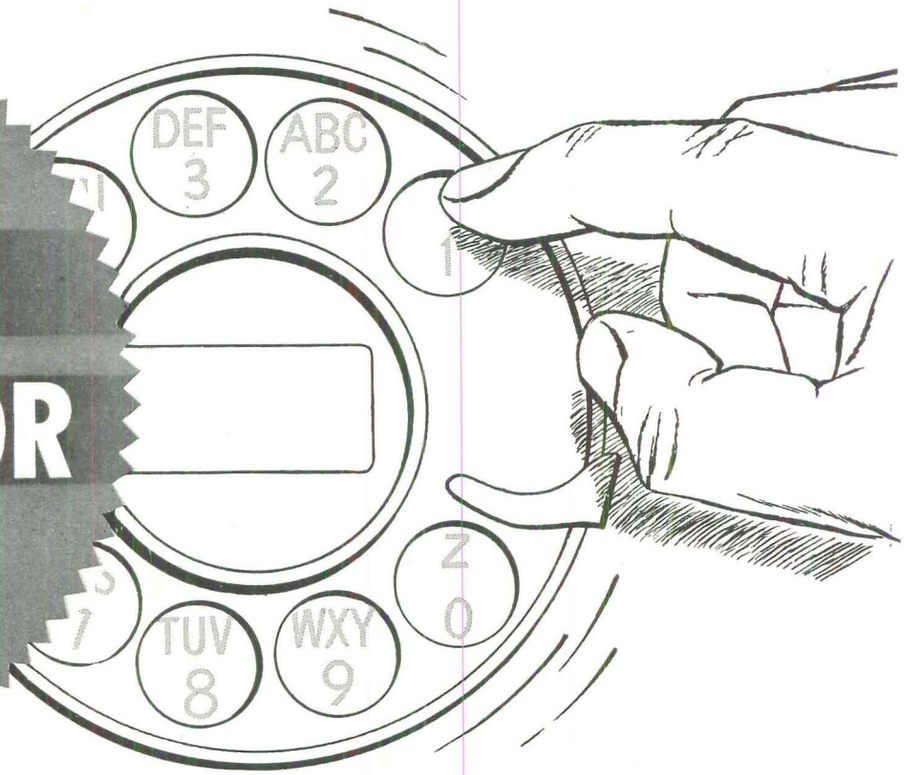
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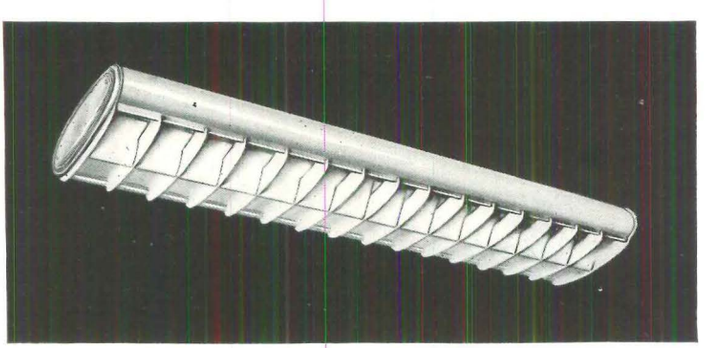
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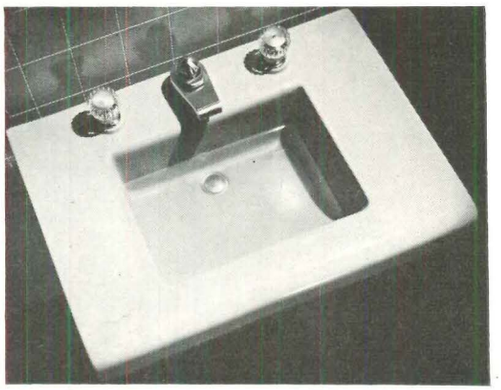
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DREYFUSS' LAVATORY takes New York Architectural League's Gold Medal Award.

Most manufacturers have a basic mistrust of public fancy not easily reconciled with expensive tooling-up procedures for new designs. Those who make products for the insides of buildings —accessories such as lighting fixtures, floor coverings and storage cabinets which become inseparable from the architecture—need and deserve encouragement from the building industry. The N. Y. Architectural League is doing its 1951 back-patting with a Gold Medal Award to pioneer industrial designer Henry Dreyfuss for his Criterion lavatory made by the Crane Co., and with honorable mentions to the Thru-Vu Blind Co. for Henry Wright's vertical blinds, to Herman Miller Co. for George Nelson's built-in furniture, to American Central Div. of Avco Mfg. Corp. for Raymond Loewy's kitchen cabinets and to Universal Corp. for the Select-A-Range flexible cooking facilities, and to Chambers Corp. for its built-in range and oven.



As adaptable as it is good looking, the Criterion lavatory may be set flush with a counter, used on top of a cabinet or braced over two slender legs.

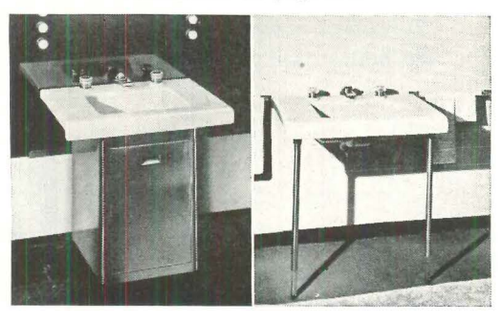


Philip Johnson (Director of Architecture and Design for the Museum of Modern Art and chairman of the award jury) called the N. Y. Architectural League's new annual award category "Architects' specifiables." Supplanting the prize in *Arts and Crafts* the new classification is known officially as *Industrial Products Designed for Architecture.* To select winners, the award jury explored every construction item from wall coverings to the kitchen sink. These are the products for which an architect has to rely on manufacturers' design sense and discretion. All he can do is pick from catalogues and showrooms and, frequently, only "suggest" and bite his lip while his client does the actual choosing. Yet once in the home, office, or store, these built-in items become indigenous with the structure.

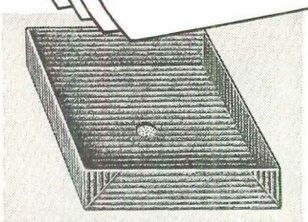
Presenting the first prize, Johnson said that the Criterion lavatory had "an extremely subtle sense of design," and that it represented "the first radical change in bathroom fixture design in almost 50 years." Dreyfuss, in accepting the medal, felt that "both architecture and industrial design must recognize the importance of designing things for people to use. . . . The designer is successful only if the product makes people safe, more comfortable, more desirous of purchase, more efficient or just plain happier."

The lavatory itself is a practical bathroom accouterment. Rectangular in line, it can be set in a counter top, can be placed over a clothes hamper and even can stand handsomely against the wall on two thin tubular legs. It measures

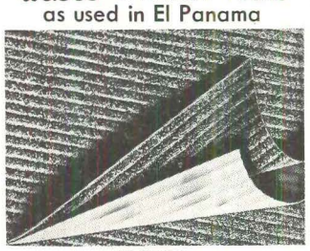
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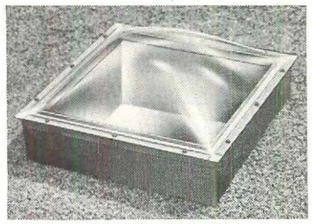




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**Pure electro-sheet copper with asphalt-impregnated fabric bonded on both sides.*

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And, once installed, he can count on these Bryant Unit Heaters to require fewer service calls . . . less trouble *overhead*. These advantages mean *savings* for him . . . no headaches for you.

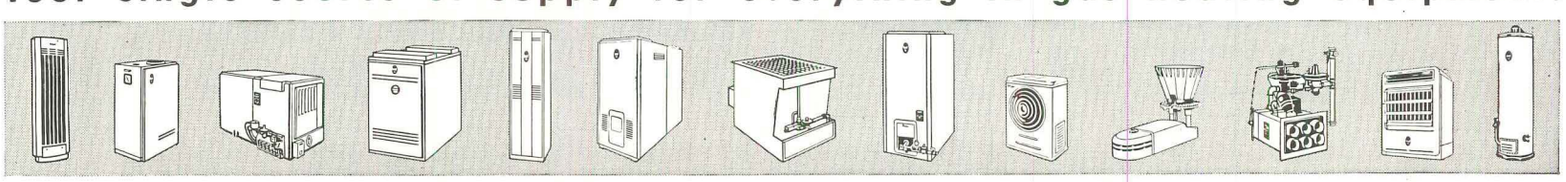
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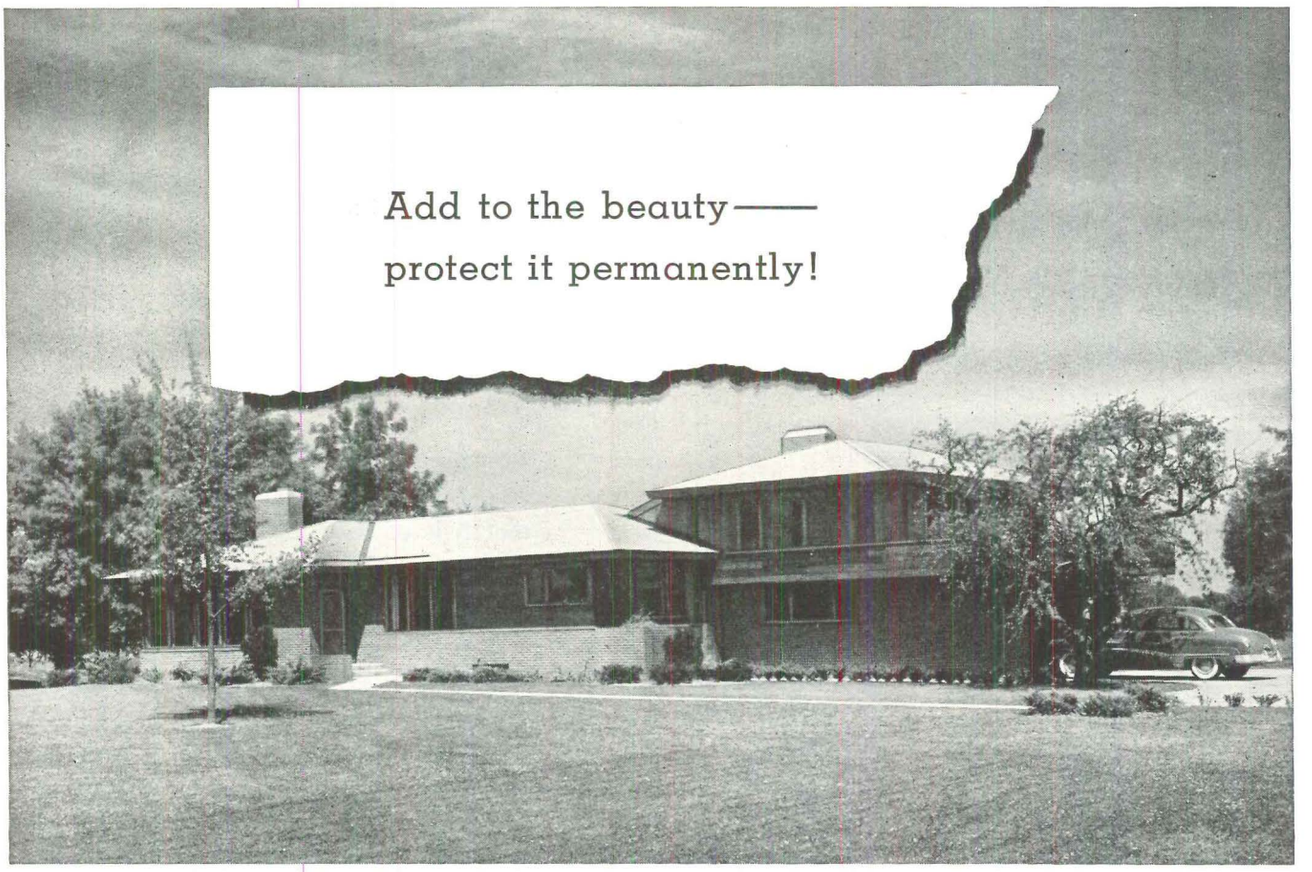
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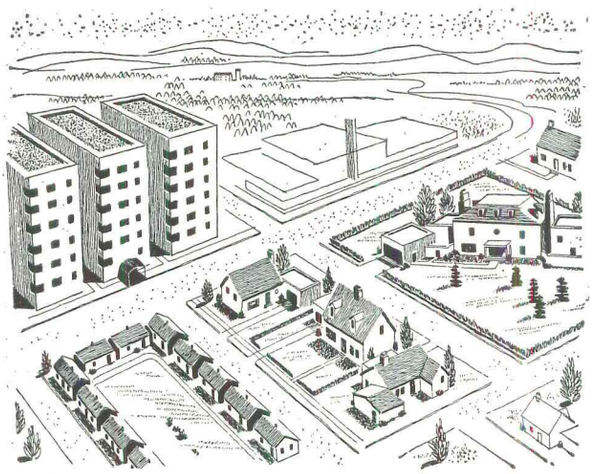
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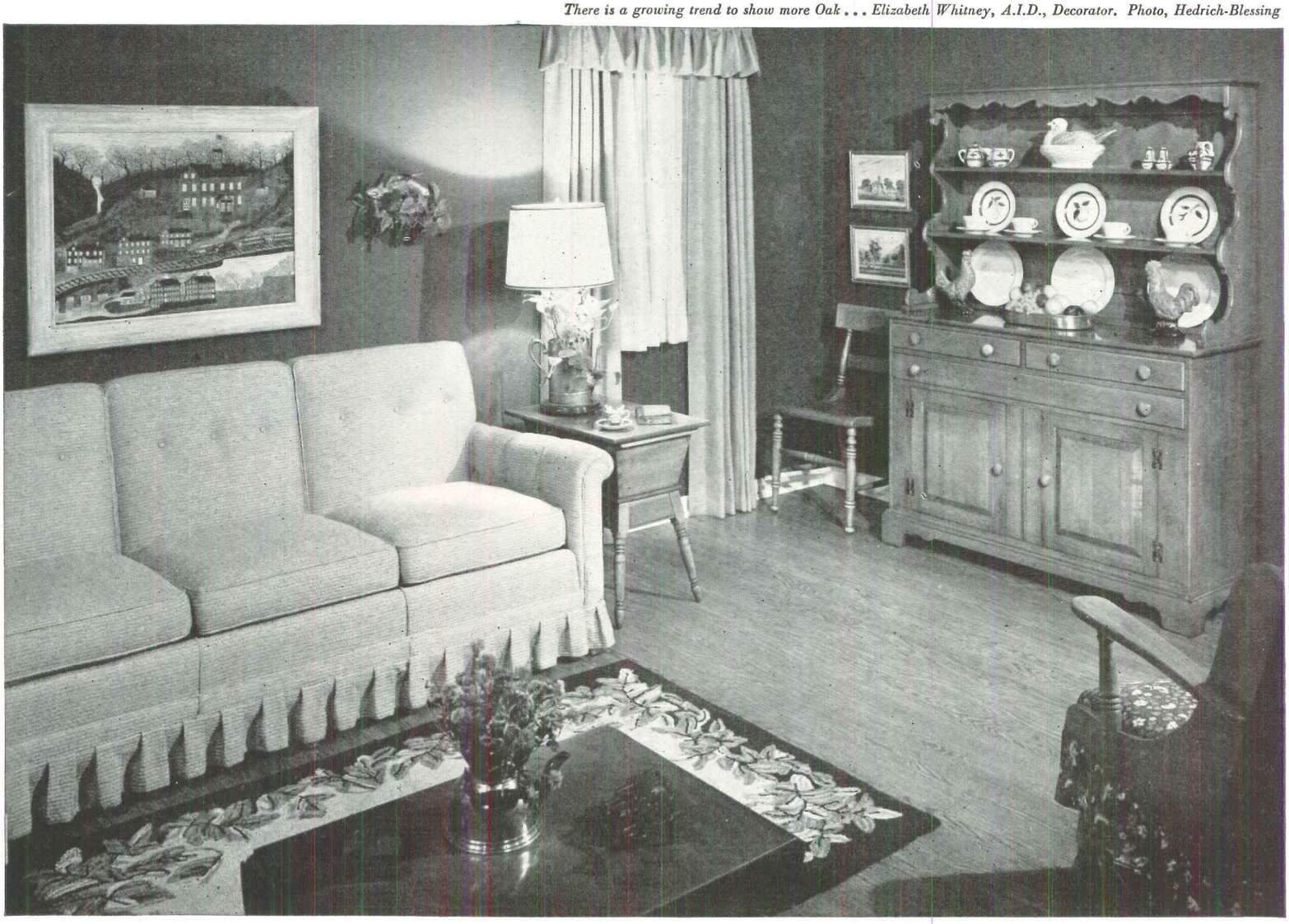
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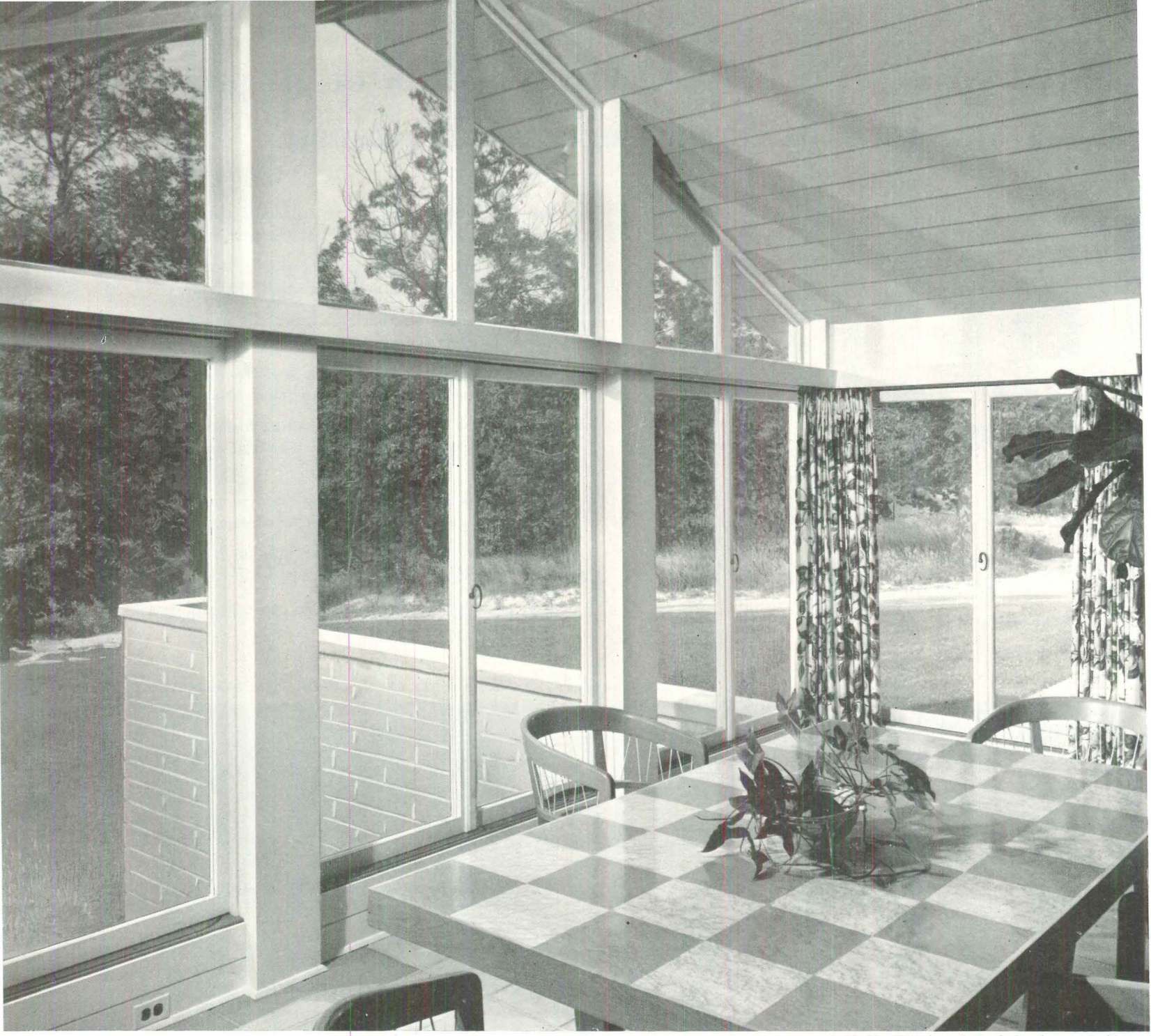
- *Durability*—no other floor can withstand the weight of furniture and bear up under constant foot traffic as well as Oak Flooring.
- *Economy*—no other floor retains its original beauty with a minimum of reconditioning as well as life-lasting Oak Flooring.
- "*Healthfulness*"—Oak has high insulating qualities that help keep rooms cool in summer, warm in winter.
- *Ease of Maintenance*—Oak can be kept clean and glistening with a few strokes of a dust mop—no special equipment or preparations needed.
- *Adaptability*—Oak is the only flooring that can be used in every type of house, with every style of decorating and with every period of furnishings.
- *Beauty*—Oak is the only flooring that has nature-given color and graining. Oak goes well with any color scheme.

Only Oak can provide these six features for home owners. That is why 85% of all *prospective* home owners want oak in their next home.

OAK IS THE FLOORING THAT HAS EVERYTHING EVERYONE WANTS

There is a growing trend to show more Oak . . . Elizabeth Whitney, A.I.D., Decorator. Photo, Hedrich-Blessing





WINDOWALL *specified by Humphrey & Hardenbergh, Inc., Architects*

ANDERSEN

Windowalls*

COMPLETE **WOOD** WINDOW UNITS

OPERATING WALLS of Andersen Gliding Window Units give extra meaning to the architect's open planning of this dining area. For each window opens.

These are WINDOWALLS . . . windows that admit pleasant breezes in addition to a view and a flood of light . . . walls that keep unpleasant weather from disturbing the owner's comfort. Hundreds of combinations are possible with these beautiful wood window units—combinations which give real satisfaction to both architect and client.

See Detail Catalog in Sweet's Architectural and Builders' Files, or write us for further information. The complete WINDOWALLS Tracing Detail File will be sent on request to architects and designers at no charge. Andersen WINDOWALLS are sold by lumber and millwork dealers.

*TRADEMARK OF ANDERSEN CORPORATION

Andersen Corporation

BAYPORT • MINNESOTA





PROUD *of the house BUT what about the basement?*

You have a right to be proud of those modern houses you are designing, but what about the basements? Do they have beautiful walls and floors? Do they contain waterproofed cements that assure a dry basement for years to come? Yes, within your hands lies the possibility of creating beautiful, dry basements for home owners . . . basements that will thrill them as they see the possibilities of a lovely recreation room . . . a bright laundry . . . or a playroom!

The cost is much less than you would expect. Simply specify Medusa Portland Cement Paint for the walls. Made by the cement company that first developed and patented cement paint, this superb masonry paint when properly applied is renowned for its beautiful, non-peeling finish. For the concrete floors, specify Medusa Rubber Base Paint, the paint that "bounces off wear" and stays new indefinitely. And above all, recommend Medusa Waterproofed Cements, gray or white, or Medusa Waterproofing Paste or Powder for all concrete and mortar work. You will be proud of the results. For details on Medusa products for basements, contact your nearest sales office.



You can build BETTER with **MEDUSA PRODUCTS**

REG. U. S. PAT. OFF.

MEDUSA PORTLAND CEMENT COMPANY

1000 Midland Bldg. Cleveland 15, Ohio
228 N. LaSalle St. Chicago 1, Ill.
135 W. Wells St. Milwaukee, Wis.
230 Park Ave. New York 17, N.Y.
1844 Oliver Bldg. Pittsburgh 22, Pa.
1307 Toledo Trust Bldg. Toledo, Ohio
25 N. George St. York, Pa.



Let Us Send You This
New Complete Data on
KINNEAR ROLLING DOORS

Your free copy of this brand new book brings you full, up-to-date details on all types of upward-acting doors for every need—including specifications on door sizes, headroom requirements, opening preparation, and so on. It shows you *how and why* the space-saving upward action of Kinnear Doors gives you highest efficiency at every opening.

In addition to the rugged, all-metal Kinnear Rolling Door—featuring the famous Kinnear-originated "curtain" of interlocking slats—it presents other Kinnear upward-acting doors. These include the sectional-type Kinnear RoL-TOP Doors (wood or all-metal), Kinnear Bi-Fold Doors (wood or all-metal), featuring two sections that "jacknife" upward and out of the way, and Kinnear Steel Rolling Fire Doors, the interlocking slat doors with special features for maximum fire safety. Kinnear Steel Rolling Grilles for protection that does not block light, air, vision, or sound are also shown. Write for this new Kinnear Catalog today!

KINNEAR
ROLLING DOORS



The KINNEAR Mfg. Co. Factories: 1640-60 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

PRODUCT NEWS

30″ wide and 20″ deep and costs about $130 in white, $165 in any of eight colors: pale jade, citrus yellow, shell pink, ivory, sun tan, French gray, sky blue and Persian red. Perfectionists might make a few criticisms of the lavatory: Its jewel-like fluted plastic and brushed chrome knobs could not be regulated as easily as the old swing type handles. A woman might complain that a shampoo spray hose could not be connected to the bold square faucet and that it was harder to clean the rectangular bowl than an oval one. On the credit side, whatever toiletry item was placed on the nice wide flat ledge would surely stay there and not roll into the basin or off to the floor.

Manufacturer: Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.

INFRA-RED STOVE LAMP cooks foods uniformly through tempered glass disc.

A new heating unit for electric ranges, Sylvania's 1250 w. infra-red lamp gives instant uniform heat. Set in a reflector and covered with a tough heat resistant glass plate, the lamp is said to cook small quantities of food rapidly and larger amounts at the same rate as a coil unit. It has a 500 and a 750 w. filament, so that its heat settings correspond to those of standard electric stoves for 115 and 230 V. The lamp is supported by three flanges on a metal reflector which rests on a ring. Its flat glass cover plate is completely resistant to thermal shock: an ice cube placed on its heated surface will not crack the glass. The specially processed glass has a melting point higher than iron, and only a sharp blow will break it. The plate is colored red and glows in

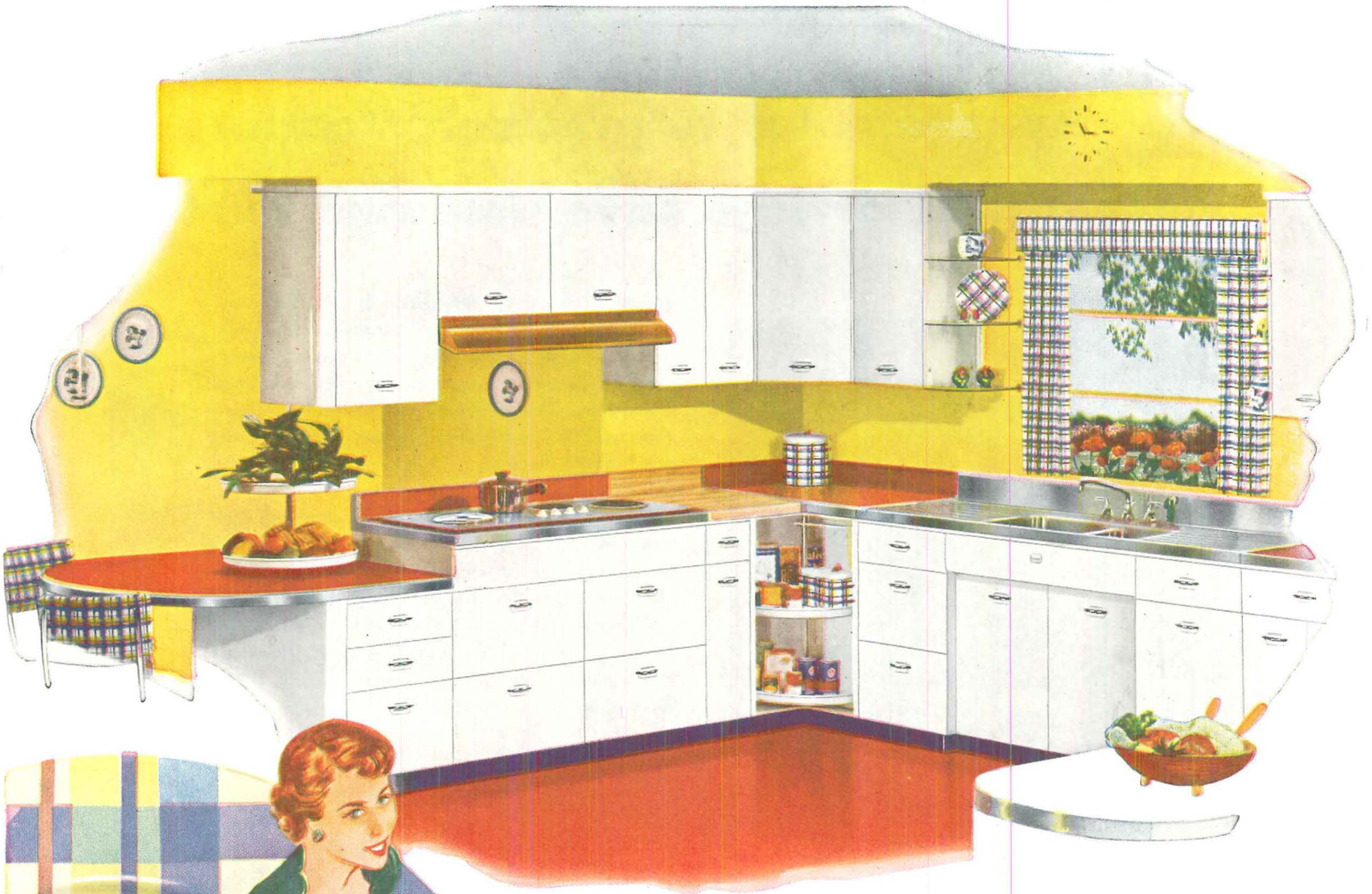




proportion to the operating temperature of the lamp below, giving the psychological effect of various degrees of heat. Just off Sylvania's assembly lines, the lamps have not yet been incorporated into an electric range or built-in countertop unit (for which their clean appearance and easy-to-wipe glass surfaces seem ideally suited). At present, consumers who have electric ranges can purchase the lamps as conversion units at about $10 each.

Manufacturer: Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

(Continued on page 222)



Automatic

"Merry-Go-Round" CORNER CABINET

....exclusive with GENEVA

You would expect this unique idea to originate with GENEVA... yet it is only one of the many unusual features of the GENEVA line. Others include - "whisper-quiet" doors, painted *inside* as well as out ... smooth gliding, nylon roller mounted drawers... and *mar proof*, baked on enamel finish. GENEVA's 84 individual cabinet sizes make it possible to design GENEVA custom kitchens to fit any room dimensions. Remember GENEVA Kitchens add greatly to the value... little to the cost. See Sweets Catalog for details.

GENEVA MODERN KITCHENS
(Dept. MB4-1) Geneva, Illinois

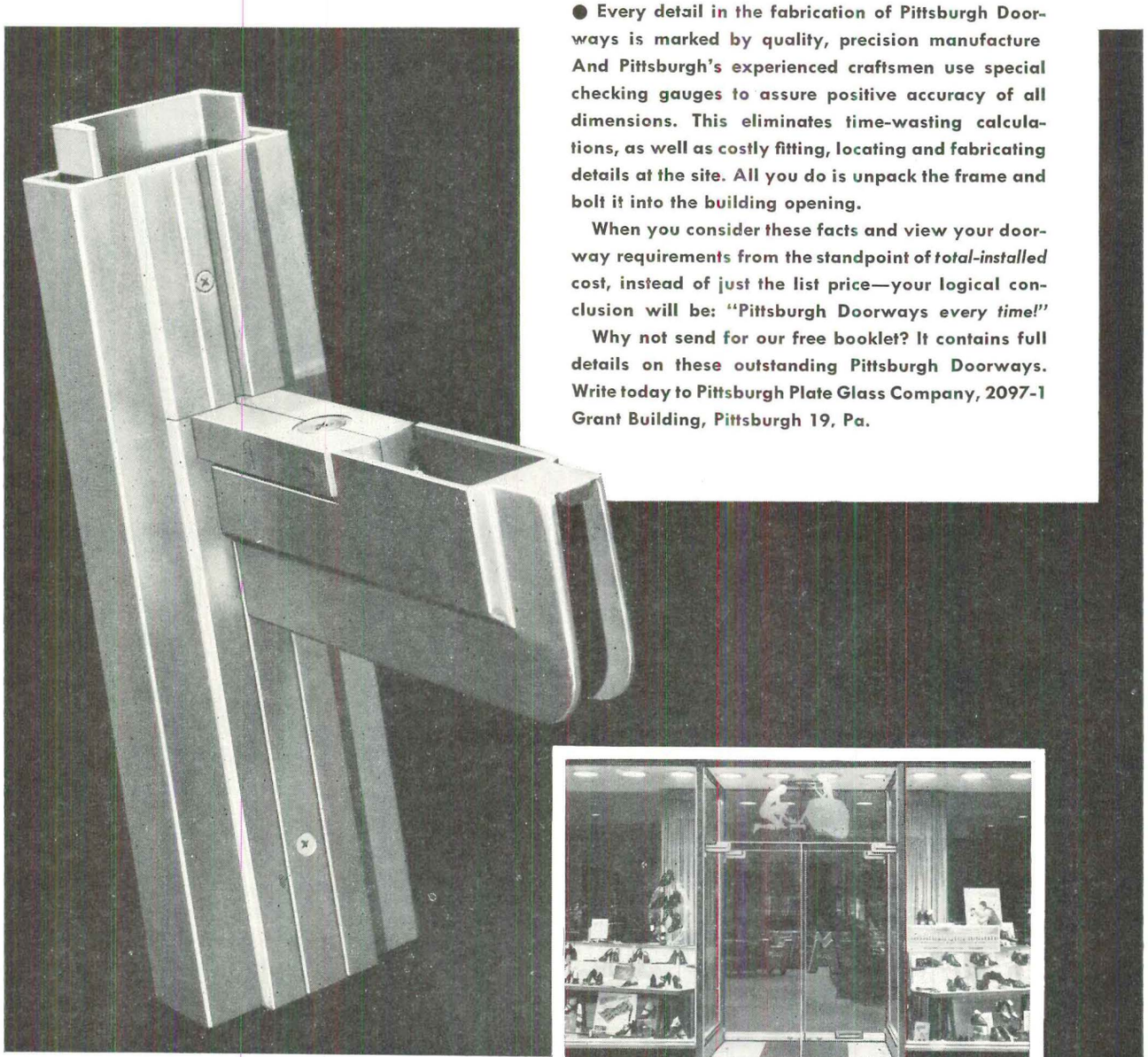


New Automatic "Merry-Go-Round" Cabinet
A slight touch—and door and shelves revolve. Remove what you want, then forget it—*door closes automatically.*



This advertisement appears in the April issue of BETTER HOMES AND GARDENS and HOUSE BEAUTIFUL, and the June issue of LIVING MAGAZINE

Factory-assembled to precision standards, Pittsburgh Doorways save time and money



● Every detail in the fabrication of Pittsburgh Doorways is marked by quality, precision manufacture And Pittsburgh's experienced craftsmen use special checking gauges to assure positive accuracy of all dimensions. This eliminates time-wasting calculations, as well as costly fitting, locating and fabricating details at the site. All you do is unpack the frame and bolt it into the building opening.

When you consider these facts and view your doorway requirements from the standpoint of *total-installed* cost, instead of just the list price—your logical conclusion will be: "Pittsburgh Doorways *every time!*"

Why not send for our free booklet? It contains full details on these outstanding Pittsburgh Doorways. Write today to Pittsburgh Plate Glass Company, 2097-1 Grant Building, Pittsburgh 19, Pa.

Architects: Solomon Kaplan & J. Joshua Fish, Philadelphia, Pa.

STURDILY-BUILT transom brackets (as shown here) support both the top pivot bearing of the Herculite Door and the Herculite transom glass. Without transom bar, they afford the maximum in open-vision, giving full view from floor to ceiling. Standard frames may be modified at the factory to include transom brackets instead of transom bars.

Pittsburgh

DOORWAYS

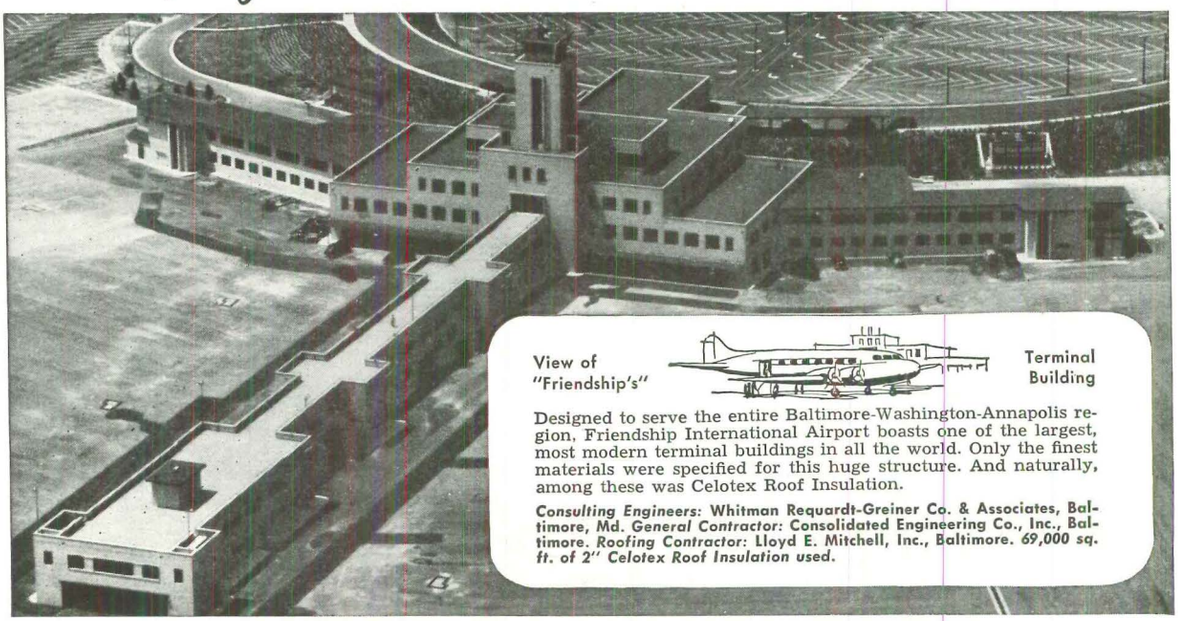
PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Baltimore's Giant New

Friendship International Airport

Specified CELOTEX ROOF INSULATION



View of "Friendship's"

Terminal Building

Designed to serve the entire Baltimore-Washington-Annapolis region, Friendship International Airport boasts one of the largest, most modern terminal buildings in all the world. Only the finest materials were specified for this huge structure. And naturally, among these was Celotex Roof Insulation.

Consulting Engineers: **Whitman Requardt-Greiner Co. & Associates, Baltimore, Md.** ***General Contractor:*** **Consolidated Engineering Co., Inc., Baltimore.** ***Roofing Contractor:*** **Lloyd E. Mitchell, Inc., Baltimore.** ***69,000 sq. ft. of 2" Celotex Roof Insulation used.***

Actual performance on the job . . . over a long period of years. That's the one, the *only* true test of roof insulation! And no other brand can challenge the JOB-PROVED record set by Celotex Roof Insulation. A record for top quality, long service, true economy . . . through *over a quarter century of actual use* in all types of installations, all over the country!

Celotex Roof Insulation is low in initial cost, easy to handle, exceptionally durable. Helps assure a superior, long-lasting roof that requires less maintenance. Preferred by roofers because it resists damage from job handling—is quickly applied.

So don't take chances with unproved materials. For complete satisfaction, always specify genuine Celotex Roof Insulation! There's a type to meet every job requirement. Write today for application specifications. The Celotex Corporation, Dept. MB-41 Chicago 3, Illinois.



Only Celotex Roof Insulation offers all these advantages

1. High Insulating Efficiency means greater comfort the year 'round, plus reduced heating and air conditioning costs.

2. Low in Cost: both initial and applied.

3. Quick to Apply: installed with less time, work and cost because it's light and easy to handle. Strong and rigid—doesn't have to be "babied" on the job.

4. Provides Excellent Bond for hot mopped roofing felts of either the asphalt or coal tar pitch type.

5. Durable, Long-Lasting. It is the *only* roof insulation made of long, tough Louisiana cane fibres—and protected by the *exclusive* (patented) Ferox® Process against dry rot, fungus and termites.

There's a type of Celotex Roof Insulation for every job

REGULAR—for efficient insulation at lowest cost.

PRESEAL—with asphalt coating for extra moisture protection. Has a conductivity "k" of 0.33 Btu before coating.

PRESEAL "30"—with asphalt coating; special low density core; guaranteed 0.30 conductance before coating for nominal 1" thick material.

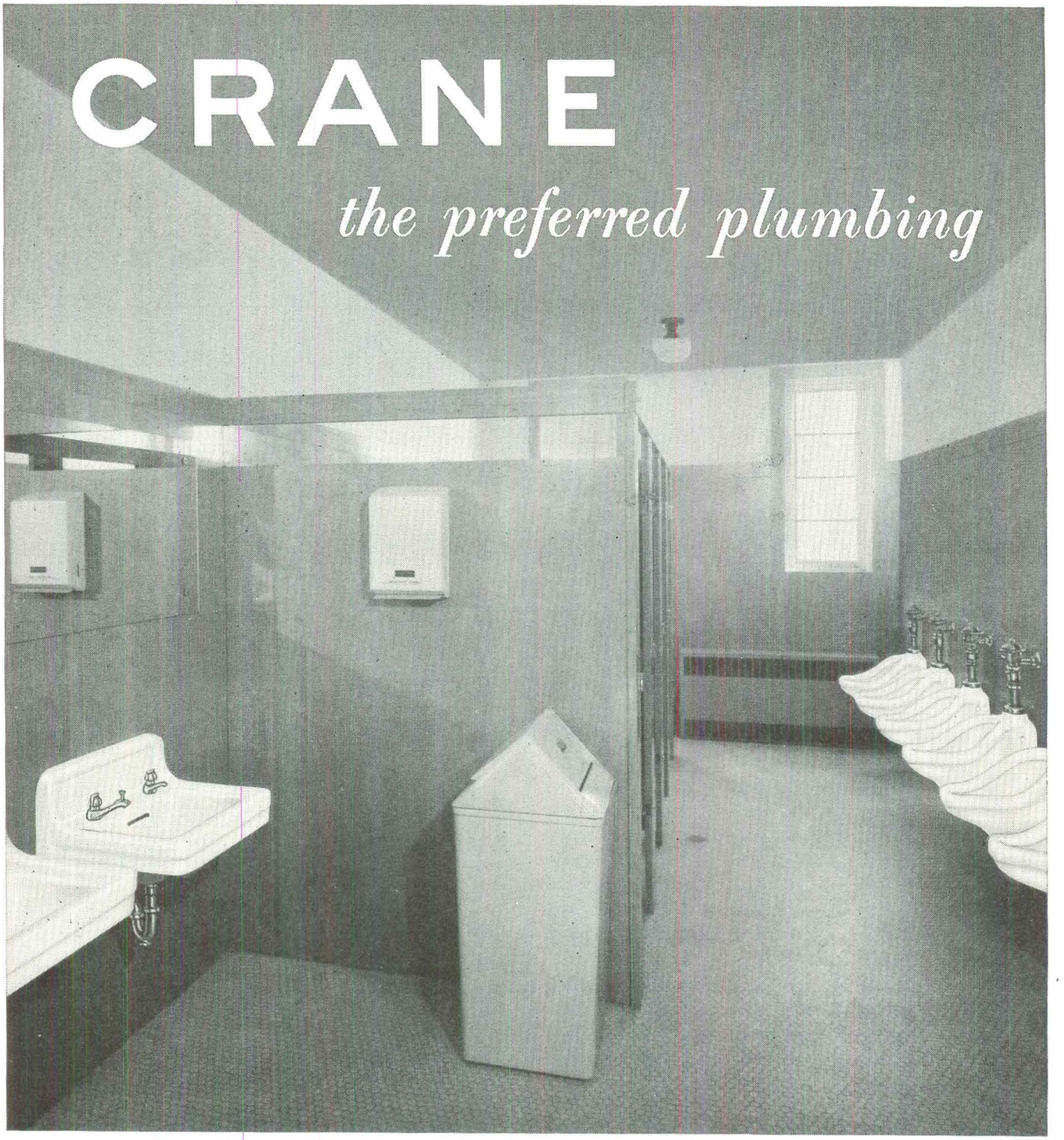
VAPOR-SEAL—with asphalt coating; guaranteed 0.30 Btu conductance before coating for nominal 1" thick material. Patented recessed edges form channels which help prevent roof blisters by equalizing pressure of air trapped under roofing.

It pays to specify genuine **CELOTEX** REG. U. S. PAT. OFF. **roof insulation**

THE CELOTEX CORPORATION • CHICAGO 3, ILLINOIS

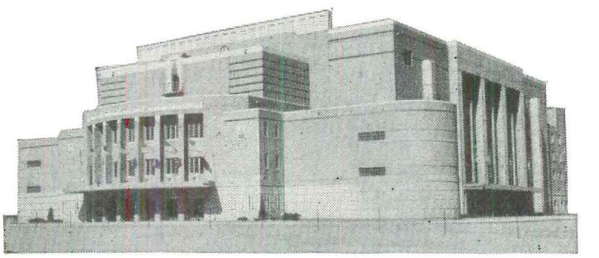
CRANE

the preferred plumbing



in SIOUX CITY AUDITORIUM

Shown here, the Crane *Norwich* lavatory and *Expedio* urinal. Both of vitreous china with design features that promote maximum sanitation and low maintenance. Consult your Crane Branch or Crane Wholesaler.



K. E. WESTERLIND, Sioux City, Iowa
ARCHITECT

AUDITORIUM CONSTRUCTORS, Sioux City, Iowa
GENERAL CONTRACTOR

V. J. HAGAN CO., INC., Sioux City, Iowa
PLUMBING AND HEATING CONTRACTOR

CRANE

CRANE CO., GENERAL OFFICES:
836 S. MICHIGAN AVE., CHICAGO 5

VALVES • FITTINGS • PIPE
• PLUMBING AND HEATING

Douglas Fir doors



A Wide Selection ...Plus 5 Quality Grades for Every Building Need

Small cottage or stately mansion ... office, hotel or commercial building . . . there's a quality-manufactured* Douglas Fir door for every conceivable building requirement.

FDI-Inspected doors are produced in 36 interior door designs, 21 entrance door designs, several garage door designs . . . in a wide range of styles, sizes and grades. Architect-designed for beauty... precision engineered for perfect alignment... perfect balance... perfect performance—doors bearing the FDI hallmark of quality are manufactured and inspected in strict accord with rigid Department of Commerce standards.

Small wonder six out ten doors specified for America's residences are Douglas Fir doors.

*The quality group of door manufacturers is comprised of mills inspected regularly by the Fir Door Institute inspection service. This service is a check on quality completely independent of individual mill supervision. The doors produced by these manufacturers carry FDI grademarks:

Acme Door Corporation
Hoquiam, Wash.

Buffelen Manufacturing Company
Tacoma, Wash.

Cruver Door Company
Anacortes, Wash.

Klamath Door Company
Klamath Falls, Ore.

M and M Wood Working Company
Portland, Ore.

E. A. Nord Co., Inc.
Everett, Wash.

Puget Sound Manufacturing Co.
Tacoma, Wash.

Robinson Plywood & Timber Co.
Everett, Wash.

Simpson Logging Company
Seattle, Wash.

Vancouver Door Company
Montesano, Wash.

The Wheeler Osgood Company
Tacoma, Wash.

FDI·A
FDI·B
FDI·BP
FDI·C
FDI·MR

Demand these FDI official stamps on every Douglas Fir, Western Hemlock, or Sitka Spruce door you buy. These FDI grade-marks certify that doors so marked meet *quality* Commercial Standards CS73-48 or CS91-41—and have been officially inspected by the Fir Door Institute. At buyer's request, doors marked by FDI stamps will be covered by notarized Certificate of Inspection.

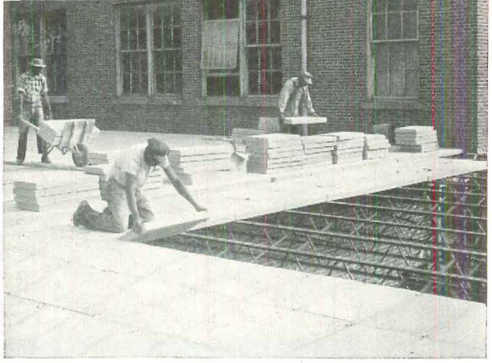
Fir Door Institute
Tacoma 2, Washington

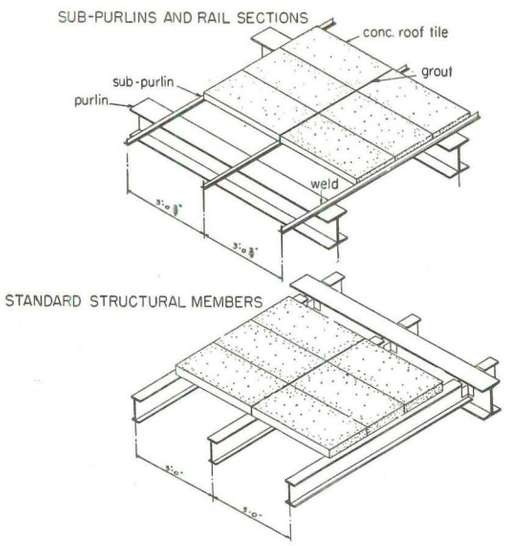
fdi

PRODUCT NEWS

PRECAST ROOF TILE provides insulation, sound-absorptive ceiling.

Made with vermiculite processed aggregate, Zonatile short span, concrete tile is an economical insulating roof deck for industrial and commercial buildings. Cast in blocks 36″ long, 18″ wide and 3″ thick, this noncombustible material weighs about 10½ lbs. per sq. ft. and has a K factor of .79. Its underside serves as a finished acoustical ceiling. Reinforced with galvanized welded wire





Installed with either standard structural members or subpurlins and rail sections, this lightweight roof decking is economical, easy to set in place.

mesh, it can carry a total load of 50 lb. per sq. ft. The installed cost—about 60 cents per sq. ft.—is said to be less than poured gypsum. Used with subpurlins and rail sections (made by the Buffalo Steel Co., Tonawanda, N. Y.), the lightweight tile is spaced evenly on the subpurlins and the sides butted tightly together. Where ridges, valleys, etc. are involved, the tile is easily cut to fit and grouted in place. The grout (a mixture of molding plaster and vermiculite plaster aggregate) is applied to all joints at ends of the tile over subpurlins. Zonatile can also be used with standard structural members. A metal clip for anchoring the material in either type of application is provided by the manufacturer.

Manufacturer: Zonatile Div., Southern Zonolite Co., Candler Bldg., Atlanta 3, Ga.

FORM TIES with built-in spreader require no tightening.

Preformed to exact size, Gates ties for concrete foundation forms do not have to be tightened by wedges, bolts or twisting. Continuous steel rod (salvageable after each job) secured by these ties hold the forms in position. In the Gates system the strength of the form is not dependent on the waler but instead on the ties which take the pressure of the concrete and distribute it to the rods. A single waler is all that is required at each rod since it has but one function—holding the wall straight. The only strain imposed on it is the initial thrust of the concrete being poured. The ties are made of 11 gauge galvanized wire in ½″ sizes from 5″ up. They are priced at about $10 per 100. Either plywood panels or sheathing can be used for the forms.

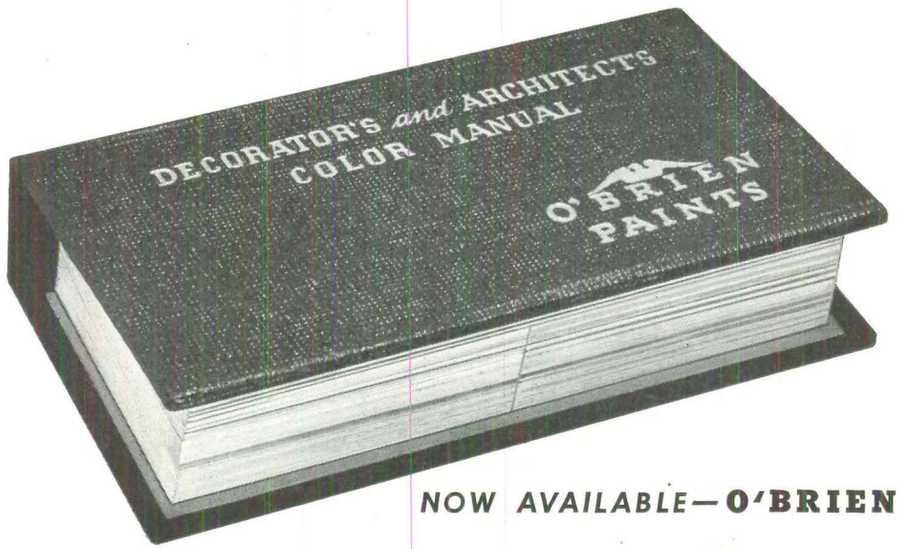




The simplicity of erection is claimed to afford substantial savings in materials, labor and stripping time.

Manufacturer: Concrete Form Tie Div., Gates & Sons, Inc., 80 Galapago, Denver 9, Colo.

(Continued on page 228)



NOW AVAILABLE—O'BRIEN

Colors of '51

Selected to harmonize with 1951 fabrics, draperies, floor coverings!



Handy, pocket size. Full-page 6″ x 3″ swatches, split for easy comparison.

Send for your copy of the new *O'Brien Color Manual* —or call your O'Brien dealer, today! Presents a full range of over 100 authentic, up-to-the-minute colors, developed by O'Brien Color Stylists, working with leading color authorities! Simple! Easy to use! Ends color matching headaches! Complete mixing instructions, where needed, assure exact color you specify. Use O'Brien Colors of 1951 this year for beautiful interiors. All colors made with O'Brien's Liquid Velvet, America's *Most Washable* flat: most colors, with Satin Finish and Interior Gloss. The O'Brien Corp., South Bend, Ind.; Baltimore, Md.

See full-page, full color O'BRIEN COLORS OF 1951 ad in April, Better Homes & Gardens, House Beautiful, Living.

THE O'BRIEN CORPORATION, Dept. A-4
South Bend 21, Indiana

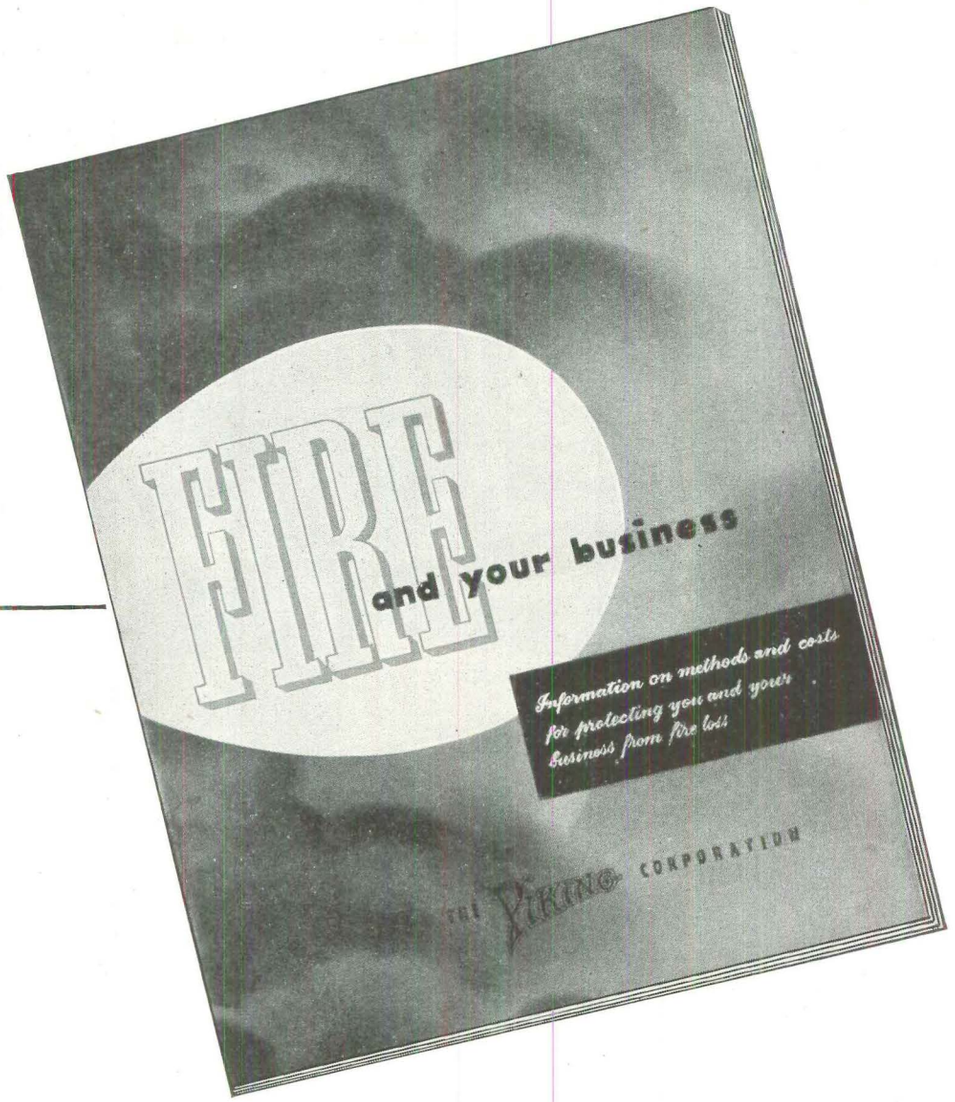
Rush my copy of new O'Brien Color Manual for which I enclose $1.75.

Name_____

Address_____

O'BRIEN PAINTS
TOP QUALITY SINCE 1875

this book can help you answer an important question



Whenever you design a building there is one question you always consider: Is this building and its contents adequately protected from fire?

"Fire and Your Business" can help you answer this important question. It shows you how, and why a Viking Sprinkler can make your buildings infinitely safer from fire loss. In addition it shows how new Viking developments have eliminated the penalties formerly inflicted on interior design by sprinkler systems — maintaining the beauty and symmetry of the most care-designed interior. "Fire and Your Business" gives you valuable information on all types of sprinkler systems and their application. It will show you how well equipped Viking engineers, strategically located throughout the country, are available to work with you and follow thru to make properly engineered installations quickly and economically.

And remember this important point: Your clients will appreciate your far-sightedness when you show them how your Viking equipped building cuts fire protection costs as much as fifty to ninety per cent.

All Viking Devices approved by Underwriters' Laboratories and Factory Mutual Laboratories.

To receive your copy write today.

DON'T GAMBLE WITH FIRE — THE ODDS ARE AGAINST YOU!

the VIKING corporation

HASTINGS, MICHIGAN

OFFICES IN PRINCIPAL CITIES

Famous Contractors Approve when The THORO System Products are— *Specified*

Here's what John F. Templin, outstanding General Contractor, Lakeland, Florida, has to say . . .



Showing 1 of 18 buildings constructed for Lakeland's Florida Southern College. All with Thoroseal on exterior surfaces. John F. Templin, General Contractor.



John F. Templin

TEMPLIN'S, INC.
General Contractors
940 East Main Street
LAKELAND, FLORIDA

November 16, 1950

Mr. Bert J. Long,
Standard Dry Wall Products,
New Eagle, Penna.

Dear Mr. Long:

Prior to 1944 we tried numerous kinds of materials for waterproofing masonry construction. Since we began using Thoroseal and Quickseal six years ago we have been entirely satisfied. Not only have all of our applications been highly satisfactory, but their use is economical.

Your distributor for central Florida, Mr. Thomas N. Morrison, Lakeland, has proven himself to be as reliable in representing your merchandise as are the products themselves.

On the basis of our experience with Thoroseal and Quickseal we gladly recommend them for waterproofing and for beautification.

Sincerely Yours,

TEMPLIN'S INC.,
By John F. Templin
John F. Templin

JFT-k



Thoroseal Protection, Architect, Frank Lloyd Wright. General Contractor, John F. Templin.

"Weathering the elements of Florida has been a continuous battle for years for most contractors in a climate of heavy rains, boiling sun and hurricane winds. That's why you'll find leading builders recommending the famous Thoro System Products. For over 39 years, these materials have been given a rugged test that shows them tops on most home builder's programs."

"The range of colors and the lasting brilliance of Thoroseal and Quickseal makes them a number one sales feature for the contractor who emphasizes quality at minimum cost."

39 YEARS OF SOUND BUSINESS REPUTATION

EXPERIENCE, in the preparation of materials for masonry protection and maintenance,— in every case means, success or failure!

With THORO System Products, the designer secures 100% protection by complete sealing of the surface, combined with exceptional beauty and color.

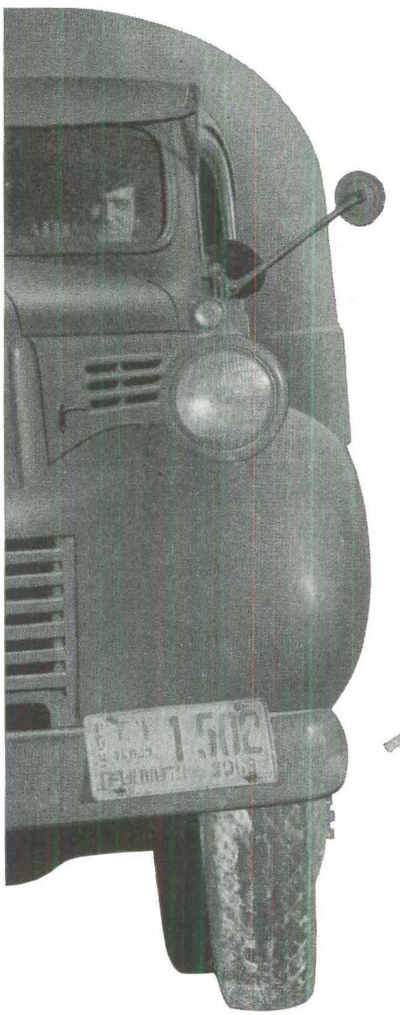
Write today for our new 20 page brochure 17-A and designer's wall chart.



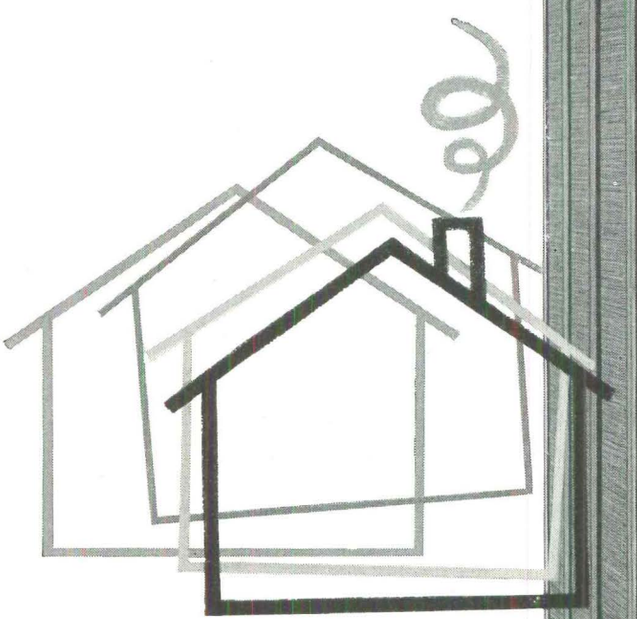
Standard Dry Wall Products

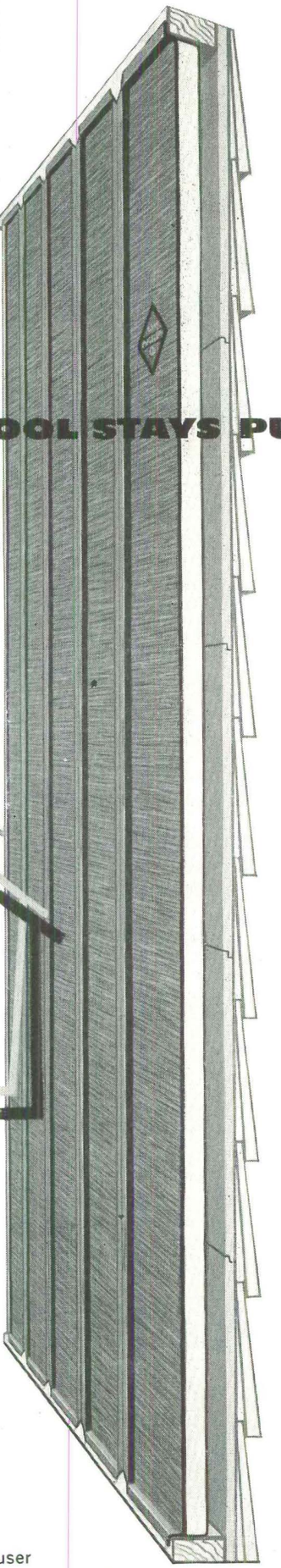
NEW EAGLE PENNSYLVANIA

HOUSES MAY VIBRATE



BUT BALSAM-WOOL STAYS PUT





Every house vibrates . . . and some insulations respond by settling or packing down. Balsam-Wool® doesn't. Its felted fibers are bonded together. This mat is cemented to the liners . . . double bonded. Securely fastened in place by sturdy spacer flanges, Balsam-Wool "stays put." Send for A. I. A. folder containing application data sheets. Wood Conversion Company, Dept. 147-41, First National Bank Building, St. Paul 1, Minnesota.

balsam-wool

Sealed Insulation — A Product of Weyerhaeuser



Counter-attractions:

More and more designers are specifying MICARTA hi-pressure plastic laminate—to make stores more attractive, to make kitchens more saleable, bathrooms more beautiful. They want, of course, to give their clients a top material that *really* resists attack, that dares you to stain, dent, crack, chip or scratch it. They know the wonderful quality standards maintained by Westinghouse. And, in addition, they are particularly attracted by these remarkable Micarta advantages:

Micarta's wonderful Colors and Truwoods

Micarta offers 42 colors — 16 solid colors, 5 Linens, 7 Foams, 9 Mother of Pearls and 5 Truwoods — a type to fit any decorative scheme. Especially interesting are the unique Decorator Colors, 9 pastels selected by a panel of the country's leading architects — superlatively smart solid colors, unique in the field.

Micarta's new Pre-bonded-to-plywood Sizes

Micarta's exceptionally wide range of sizes offers unusual opportunities for economy. Your fabricator can almost always find a size from which he can cut with less waste. The 1/16″ sheets are available in 10 sizes. And now there are four sizes in Micarta Pre-bonded to exterior grade Weldwood Plywood — 24″ x 96″, 30″ x 60″, 30″ x 96″, 48″ x 96″ in 7/8″ thickness. These panels can be cut, trimmed and installed by any carpenter without the use of a press. Remember this when just replacing a top, designing a built-in table, etc.

Micarta's true-satin finish and Beautymask

Typical of Micarta's extra quality features are its *true* finishes and method of protecting them. Both the satin and glossy finishes are built-in, not achieved through brushing or buffing. And, to insure a perfect installation, the "Beautymask", a strong manila sheet, protects the finish through shipping, storage and handling.

Discover **MICARTA**® yourself!

Send for Free Sample

Manufactured by

WESTINGHOUSE

and sold for decorative purposes only by

UNITED STATES PLYWOOD CORPORATION *and* **U. S.– MENGEL PLYWOODS, INC.**

UNITED STATES PLYWOOD CORPORATION MOB-4-51
55 West 44th Street, New York 18, N. Y.

Please send me free sample and full information on MICARTA.

NAME_____

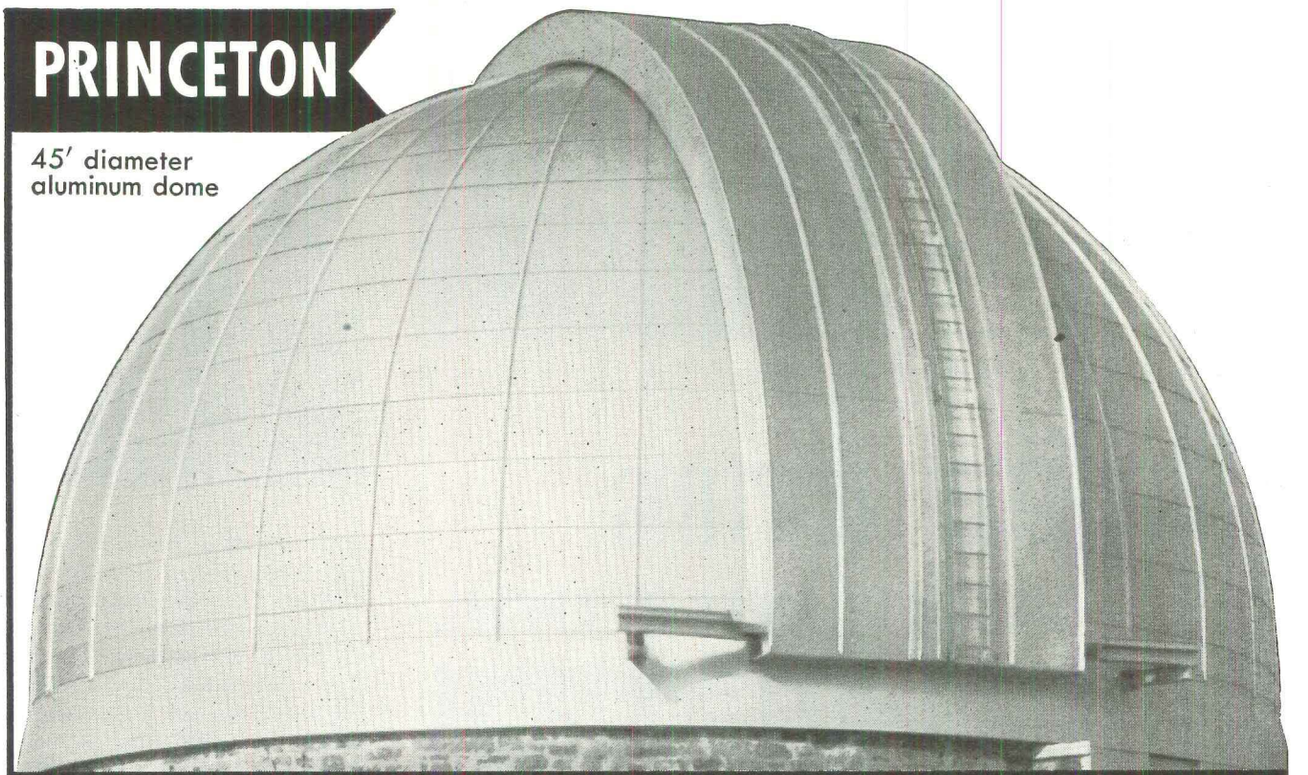
COMPANY_____

ADDRESS_____

CITY_____ STATE_____

PRINCETON

45′ diameter
aluminum dome



...another fine example of Overly craftsmanship backed by 63 years of experience

Halstead Observatory at Princeton, New Jersey, has a new aluminum dome. Roofing shown in these two photos is Overly-Goodwin Batten Type, with patented joint construction that allows for expansion and contraction and does not leak.

Reason for this new installation was that the former, 22-gauge steel sheeting—placed in service during 1932—had rusted out critically at the joints. And the doors that slide away from the telescope had been leaking. So, with the protection of valuable astronomical equipment in mind, as well as for the sake of appearance, Princeton University found it necessary to replace the old steel sheeting. By re-roofing with *aluminum* instead of steel, *first cost* became *the only cost!*

E. A. MacMillan, Superintendent of the University's department of grounds and buildings, was the designer of the aluminum dome. And *Overly* was the fabricator and erector. Original steel framing was utilized.

See Sweet's file for exclusive features of Overly-Goodwin Batten Type Metal Roofing, or send for *Catalog 8-B.*

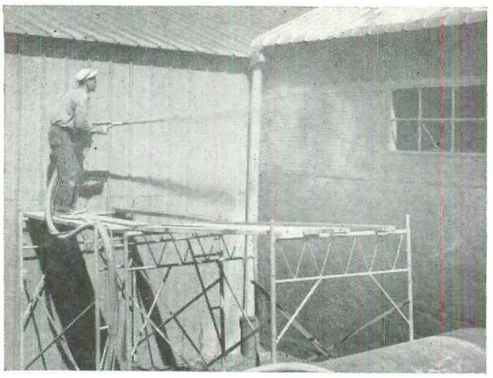
METAL PRODUCTS SINCE 1888

OVERLY MANUFACTURING COMPANY, Dept. MB
GREENSBURG, PA. (Phone Greensburg 154)
• Sales Representatives in All Principal Cities •

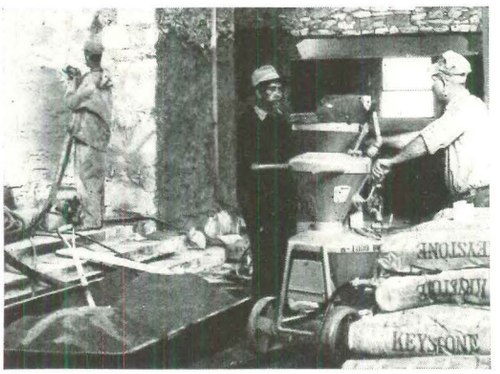


SPRAY EQUIPMENT, adaptable for numerous materials, priced for small builder.

Until recently about the only way a small contractor could afford "shot" concrete was as housewives get puffed cereals "shot from guns" —packaged—but he could not buy the gun to shoot his own. Now, rather than rent pneumatic spray equipment and engineering services (a procedure practical only for large projects) the builder can purchase the machinery and accessories outright at reasonable cost. One company making this kind of setup is the Air Placement Equipment Co., manufacturers of the Bondactor. This device can be used to apply pneumatically concrete surface coatings directly on rigid insulation or over building paper and wire mesh. By making the proper air adjustments it can be adapted for sandblasting, for stucco coatings on cinder block, for spraying lightweight aggregate insulating concretes, to "weld" precast wall, roof and floor section in place, to apply refractories and (with a special nozzle) acoustic plastics.



Three men can handle the Bondactor air placement equipment to apply sand, cement and cementitious aggregates to masonry and other building surfaces.



The Bondactor is a complete unit for air applications of this variety of construction materials. It includes in its price (about $2,000) the Bondactor machine, gun, hose, auxiliary air line and water pressure hose to the gun, air hose from air source to machine, water pressure tank (or pump when city water pressure is not available) and sandblasting nozzle assembly. The machine is made in two models. The type 1,000-S which works with a 105 CFM air compressor is recommended for general maintenance and stucco applications. The 1,000-L uses a 210 CFM compressor and is adaptable for major air placement repair jobs and new construction.

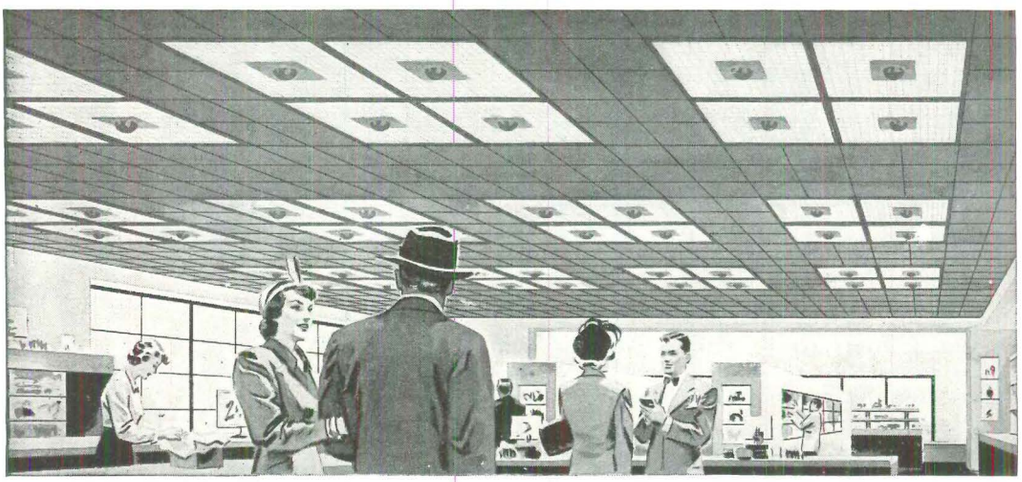
Utilizing an air line as well as a water line in applying concrete, the gun picks up the aggregate in its controlled velocity air stream, wets it at the nozzle in an atomized mist and deposits the hydrated aggregate instantly. The low water ratio of not more than 3 gal. per standard sack of cement is said to assure a dense nonporous deposit which will not shrink as it cures. The air placed concrete weighs about 170 lb. per cu. ft. —about the same as granite. The first action in the application is that of sandblasting. The sand cleans the surface and then the moistened cement is driven into the pores of the surface until a neat coat builds up to about 1/32". This coating acts as a cement pad for the mortar coat which can be brought out to any desired thickness. The company includes the services of a qualified engineer in the equipment price to help the purchaser set up the machinery and train personnel in its use.

Manufacturer: Air Placement Equipment Co., 2525 Southwest Blvd., Kansas City, Mo.

(Continued on page 234)

ONLY Skylike LIGHTING

HAS BOTH KINDS OF APPEAL



Silvered-bowl incandescent advantages
Modern fluorescent-type appearance

Naturally your clients want lighting that's up-to-date in looks (and Skylike is!). But they really get excited when they hear about Skylike's freedom from maintenance troubles—and the fact that Skylike lighting costs only ½ to ⅓ as much as other equipment delivering comparable results.

No other lighting combines all these advantages:

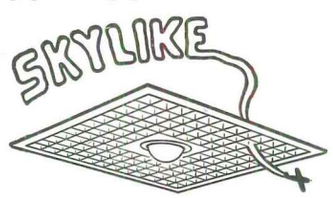
1. High initial and maintained light output.
2. Softly diffused shadows.
3. Low brightness and 90° shielding.
4. No flickering, blinking, or hum.
5. Warm color—most desired by merchandising experts.
6. Instant starting.
7. Variable lamp size—150- to 500-watt.
8. No light loss from darkened walls or ceilings.
9. Floor-service relamping—no ladders or scaffolds.
10. Hermetically sealed silver reflecting surface.

ARCHITECTURAL LATITUDE

Skylike units fit 24" x 24" ceiling tiles, fully or partially recessed, or may be surface mounted—in rows or patterns.



ACCENT OR DIRECTIONAL LIGHTING is readily and effectively accomplished with Skylike. A semi-silvered-bowl lamp and a simple accessory are substituted for the regular lamp.





Send coupon for Skylike booklet

Graybar Electric Company, Inc.
Graybar Building,
420 Lexington Ave.
New York 17, New York

Please send me a copy of "Skylike Louvered Incandescent Lighting Systems".

Name_____ Title_____
Firm_____
Address_____
City_____ Zone____ State_____

S-13-134



The unusual texture and rich golden tones of Armstrong's Cork Tile make it an ideal flooring choice for interiors with modern architectural styling. In addition to its decorative refinement, it's a floor that is exceptionally comfortable and quiet underfoot. Armstrong's Cork Tile is also used for modern wall treatments.

Office waiting room, Drs. C. D. Rodgers & C. P. Wickard
Obstetrical Clinic, Little Rock, Arkansas
Architect Yandell Johnson, A.I.A.

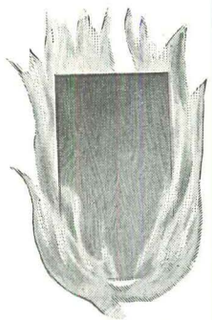
ARMSTRONG'S CORK TILE

ARMSTRONG CORK COMPANY • LANCASTER, PENNSYLVANIA

Roddiscraft Solid Core Flush Veneered Doors

An Institution with Institutions

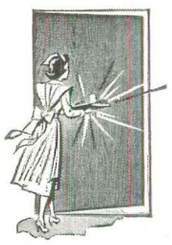
For nearly two generations Roddiscraft Doors have been standard equipment in hospitals, schools, hotels, churches and other institutions. Roddiscraft standard construction incorporates all the features demanded by institutional installations — fire protection, sound resistance, ability to take rough treatment. Roddiscraft standard 5-ply construction — core, crossbandings and faces welded into a single unit — builds in all the strength and stability of plywood construction.



SAFE — Standard 1-3/4" construction withstands independently conducted fire tests in excess of 40 minutes.



SILENT—Standard 1-3/4" construction develops a sound transmission loss of 30.9 decibels.



STURDY — Solid core and strong 1/10" crossbandings give complete support to the faces — absorb shock.



WATERPROOF—Two complete waterproof glue lines deny entrance to moisture.

Standard Thickness Face Veneers* Out-Look and Out-Last Thick Veneers

The thinner the face veneer, the less wood exposed outside the waterproof glue line. That's a self-evident fact — and that's why Roddiscraft Standard Thickness Face Veneers — *1/28" for most woods — are best. Exposure tests show checking patterns become coarser and more conspicuous as the face thickness increases. Thin veneers also permit better matching, are more resistant to abuse because of the tough hardwood crossbandings to which they are inseparably bonded.

Roddiscraft construction utilizes 1/10" thick hardwood crossbandings . . . sure protection against core pattern showing through face veneers after finishing.

FOR SPECIAL INSTALLATIONS

FLUSH VENEERED FIRE DOORS FOR INTERIOR USE...

Advanced safety features that guard life and property are built into Roddiscraft Protex Doors. That's why these doors are so often specified in plans for hospitals, hotels, schools and apartment buildings. They are built to withstand the 60-minute fire test, including the hose stream test. Independent laboratories show they have a safety margin well above the prescribed minimum. Identical in appearance to other Roddiscraft Flush Doors.

FLUSH VENEERED DOORS FOR X-RAY PROTECTION...

The Roddiscraft X-Ray Door matches regular Roddiscraft Flush Doors in appearance. It is equipped with a continuous sheet of lead set midway between a divided wood core. Otherwise, it is identical in all respects to the Roddiscraft Solid Core Door. Roddiscraft X-Ray Doors are manufactured only on special order. Any thickness of lead may be specified, according to the amount of protection required.

Roddiscraft

RODDIS PLYWOOD CORPORATION

MARSHFIELD, WISCONSIN

NATIONWIDE Roddiscraft WAREHOUSE SERVICE

Cambridge, Mass. • Charlotte, N. C. • Chicago, Ill. • Cincinnati, Ohio • Dallas, Texas • Detroit, Michigan • Houston, Texas • Kansas City, Kan. • New Hyde Park, L. I., N. Y. • Los Angeles, Calif. • Louisville, Ky. • Marshfield, Wis. • Milwaukee, Wis. • New York, N. Y. • Port Newark, N. J. • Philadelphia, Pa. • St. Louis, Mo. • San Antonio, Texas • San Francisco, Calif.

Another Tall Problem in Air Conditioning... Solved with York Equipment

—The New York Life Building

Air conditioning any building over thirty stories tall calls for experience and skill. It's a still trickier job if the building grew up before air conditioning did.

• • •

We're proud of our part in contributing, with efficient and economical air conditioning, to the business life of New York Life, which contributes so much to American living.

• • •

But we're even prouder of the way York experience and York advances in techniques and equipment helped the engineers smooth out the rough problems.



STOP, READ AND PROFIT!

As new construction shifts to defense and essential supporting industries, you will be concentrating more and more on modernizing existing structures. We will gladly help you—with specialized knowledge based on many complex installations in older buildings whose original plans made no provision for air conditioning.

Consulting Engineers: Meyer, Strong and Jones

SKIP THE DRUDGERY

As defense conversion and construction progress—you'll be facing new problems in air conditioning and refrigeration. When you do, remember York's seventy-five years of experience and leadership in these fields can work with you and help you save hours of detail and drudgery.

AN OUNCE OF PREVENTION

Save your clients maintenance worries. York's Certified Maintenance Plan keeps a sharp eye on equipment, keeps it running at top efficiency for a determined-in-advance fee. Check today with your York Representative, York Corporation, York, Penna.

York refrigeration air-conditioning

The big advances come from YORK

Headquarters for— **Refrigeration and Air Conditioning**

it's the

"Wooster" DOOR!



First to produce

MATCHING

STEEL

INTERIOR and LABELED

APARTMENT ENTRANCE

DOORS

The USF Hollow Steel "Wooster Door" is the unique vertical flush stile and panel design that was first to offer identical appearing interior and labeled entrance doors for apartments and housing projects. It is the original thin hollow metal door offering this consistent design *throughout* your planning. Many of America's largest and best known new apartment buildings and housing projects already have Wooster Hollow Steel Doors and Frames. It's the door of the year . . . and years ahead!

Architects and builders are invited to obtain informational literature without obligation, or . . . See Us in Sweet's.

USF

MANUFACTURERS OF

Hollow Metal Doors and Frames
Prefabricated Metal Buildings
Corrugated Metal Window Wells
Highway Guard Rail
Structural Plate Bridge Flooring
Corrugated Metal Pipe

UNITED STEEL FABRICATORS, INC.

WOOSTER, OHIO

The 2 best "HEADLINE" words in this - or any other - ad:

NEW and EASY



Patent Pending

. . . and they describe *exactly* the

MOR-SUN

COUNTER FLOW FURNACES

NEW: . . . newly designed for PERIMETER and SPIDER design radiant warm air heating

EASY: . . . designed for easy installation in basementless slab houses

FREE! *Write for the story of MOR-SUN Counter Flow heating systems for basementless slab houses.*

"Sells on Sight"

MOR-SUN
FURNACE DIVISION
MORRISON
STEEL PRODUCTS, INC.

645 AMHERST ST. • BUFFALO 7, N. Y.

PORETHERM



Poretherm is a high grade, permanent, fireproof, rigid, insulating, cellular concrete weighing 30 lbs. per cu. ft. Made of Portland cement it is excellent for roof and floor insulation. Poured in place 20 to 60 ft. high through a 2" hose with the mixing equipment on the ground floor it dries rapidly and forms a fireproof rigid blanket. Recommended for large areas only.

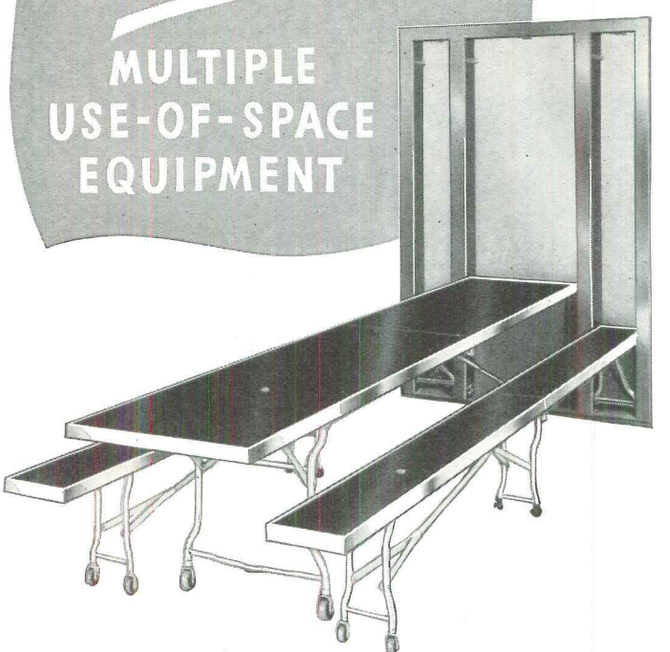
Write for complete information.

PORETE MFG. CO.

N. ARLINGTON, NEW JERSEY

In-wall

MULTIPLE USE-OF-SPACE EQUIPMENT



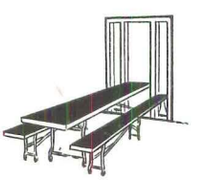
Activities area can be converted to lunch room for 200 in 8 minutes. It's the logical solution to the problem of high building costs and increased enrollments. May we send you complete information?

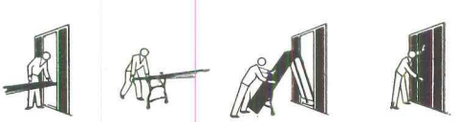
Schieber Manufacturing Co.
12738 Burt Road
Detroit 23, Michigan

In Canada
La Salle Recreations Ltd.
945 Granville Street
Vancouver, B. C.



Easy to roll out from wall

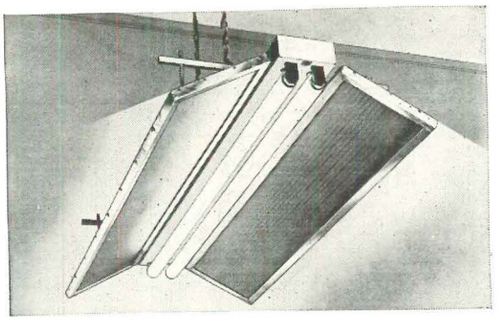




Easy to roll back into wall

SUSPENDED RADIANT HEATER doubles as lighting fixture.

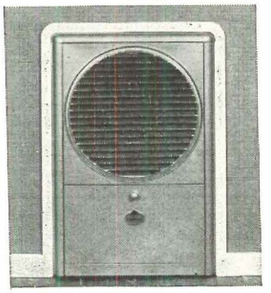
The Directoray provides economical spot heating for sections of large lofts and industrial areas isolated from the plant heating system. Because the location requiring heat concentration usually demands good lighting too, the manufacturer has incorporated two 48″ fluorescent tubes in the fixture. Lighting and radiating heat over 50 sq. ft. of floor space, the fixture costs only about 3 cents an hour to operate. The radiant panels are placed on either side of the tubes and pitched so that cool room air can circulate around the heat-sensitive bulbs, keeping their temperature constant whether the heating panels are on or off. Set in 9 x 48″ polished aluminum frames, the shatterproof glass panels have an aluminum grid heating element fused into the surface. They also act as mirror reflectors for the lights, greatly increasing their effectiveness. The panels, which may be controlled by a manual switch or thermostat, are wired independently from the lights so that one facility can be used without the other. A complete fixture sells for about $90. Panels and mounting brackets also are available for attachment to existing 48″ light fixtures. The manufacturer advises placing the fixture 8 to 10 ft. above the floor; height of the ceiling above does not affect the Directoray's operation.



Manufacturer: Salton Mfg. Co., Inc., 74 Reade St., New York 7, N. Y.

$150 WALL HEATER is complete heating system for small home.

Without sheet metal ductwork or extensive piping, a single gas fired Coroaire is said to supply filtered humidified heated air to every part of an average 6-room house or apartment. Although it is only about the same size as a console radio —26″ wide, 40″ high and 24¼″ deep—it has an hourly input of 85,000 Btu. The compact unit's efficiency is said to be due to its Venturi tube heat exchanger which spins the air as a funnel swirls liquid. By this centrifugal action





and staggered placement of the tubes, the air zigzagged through the exchanger is brought into contact with 93 sq. ft. of hot tube surface. The air continues to swirl after it passes through the heater and is diffused throughout the house. Movement of air is about 1,100 cu. ft. per min., and the Coroaire's forced circulation also may be used in summertime for cooling. Well insulated, the model 90 WM is approved by the American Gas Assn. and FHA for recessed wall installations directly next to any type of building material. The front is set flush with the wall and the rear projects into a utility room or alcove. Automatic controls, readily accessible on the outside of the heater, include a wall thermostat, safety pilot, pressure regulator, fan switch and summer fan switch. Coroaires are being supplied to large housing projects for less than $150 each. Placing one in position and hooking it up runs about $10. Operating costs in the Cleveland area are said to be about $60 per heating season.

Manufacturer: The Coroaire Heater Corp., 1422 Euclid Ave., Cleveland 15, Ohio

(Continued on page 238)



NEW SAFETY-DESIGN FUME HOOD for handling Radioactive Isotopes

Design approved for use by Oak Ridge Institute of Nuclear Studies

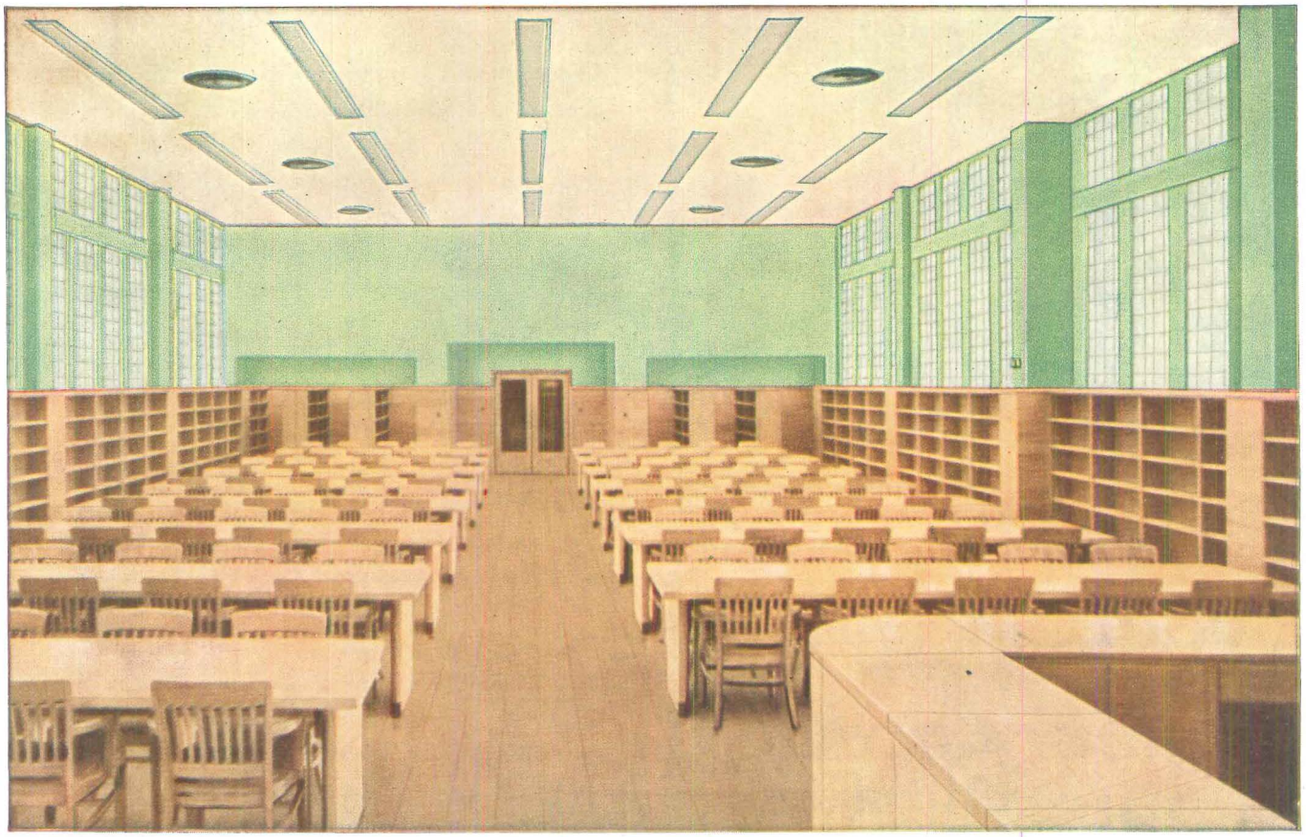
- Air foils at hood face allow air to enter without turbulences.
- Low Velocity . . . operates with less than half the CFM of air needed on a conventional type hood.
- Air current directed across working surfaces removes heavy gases.
- Entire interior of hood is stainless steel for easy decontamination.
- Steel grating supports working surface, giving load carrying capacity up to 400 lbs. per sq. ft.
- Equipped with blower switch, warning light, and "over load" warning bell.
- All service controls outside—no reaching in.
- Outside measurements: Height 9 ft.; width 6 ft.; depth 3 ft. 6 in. Five inch Stainless Steel Sink welded into top.

Precision built by Kewaunee Mfg. Co., one of America's oldest and largest makers of fine Laboratory Equipment, including all types of Stainless Steel Equipment for Radioactive Laboratories.

We also manufacture Laboratory Tables, Sinks, etc., for all types of Laboratories
Representatives in Principal Cities

Kewaunee Mfg. Co.
C. G. Campbell, *President*

5096 SOUTH CENTER STREET • ADRIAN, MICHIGAN



● *Study hall of University of Tennessee Law College after being painted according to Pittsburgh COLOR DYNAMICS.*

Pittsburgh COLOR DYNAMICS contributes to higher school efficiency these five ways . . .

- *reduced eye-strain*
- *better academic grades*
- *higher teaching efficiency ratings*
- *fewer housekeeping problems*
- *less vandalism*

WITH the perfection of COLOR DYNAMICS for use in educational institutions, Pittsburgh Paint keeps pace with the progress that has been made in the science of teaching during the past quarter-century.

● **With COLOR DYNAMICS**—color can be specified systematically and scientifically to promote efficiency of students and teaching staffs alike.

● **Science has shown** some colors stimulate and excite, others soothe and relax. Still others fatigue, depress. Pittsburgh's system of COLOR DYNAMICS makes use of this *energy in color* for functional as well as decorative purposes.

● **By following** this system of painting you specify accurately the proper colors for all types of school rooms in accordance with their purposes, their exposure to sunlight and their available lighting facilities.

● **You lessen eye-strain,** stimulate concentration and help to improve academic grades among students. You heighten efficiency ratings of teachers. You simplify housekeeping problems. School authorities also tell us that in many instances after repainting with COLOR DYNAMICS vandalism has declined.

● **Benefits such as these** should interest every architect and builder engaged in erecting or modernizing school buildings. Why not discover for yourself how you can obtain them for the school you plan to build?

● **For a complete explanation** of COLOR DYNAMICS and how you can use it, send for our *free* booklet containing many suggestions for color arrangements.

Ask for FREE Color Engineering Study of Your School

● **Let us make** a color engineering study of the school you are planning. We'll be glad to do this without cost to you or obligation. There's a trained COLOR DYNAMICS expert at each of our 75 warehouses. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have a representative see you at your convenience. Or mail this coupon.

SEND FOR A COPY OF THIS BOOK!

Pittsburgh Plate Glass Co., Paint Div., Department MB-41, Pittsburgh 22, Pa.

☐ Please send me a FREE copy of your Booklet "*Color Dynamics.*"

☐ Please have your representative call for a Color Dynamics Survey without obligation on our part.



Name_____

Street_____

City_____ County_____ State_____

PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Why should *you* concern yourself with school doors?

Stop to think about the matter and you'll agree—the doors in a school building have a heavy responsibility

They must be fire resistant because today school officials and their architects recognize the need of providing substantially greater fire protection than is offered by the conventional lumber-core door.

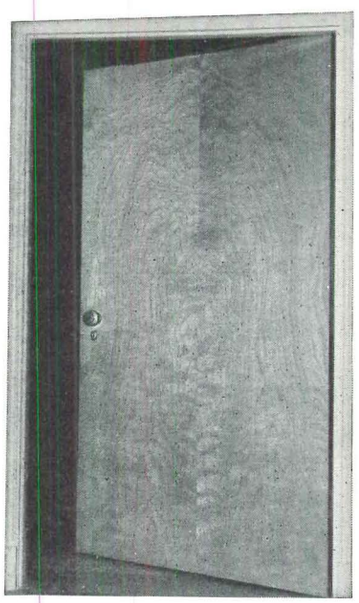
They must be beautiful because the utmost in decorative qualities is now practicable without sacrifice of the safety factor.

They must be durable because — as you know so well — almost everything about a school building must be built to withstand abuse.

They must be light weight, easy to open and close because small children may be using them. School doors are in motion much of the time and, therefore, must be perfectly balanced and free from warpage.

You get all these desired qualities *and more* in the two Weldwood® doors described here. No other school doors on the market offer such a combination of features important to you.





No school can afford to be without the protection offered by this beautiful, inexpensive wood-faced fire door.

THE WELDWOOD FIRE DOOR carries the Underwriters' Label for all Class B openings. It has the incombustible Kaylo* core with special construction and fireproofed edge banding. Standard flush faces are handsome birch veneers. A wide variety of other fine hardwood faces is available on special order. Combined with safety and beauty, Weldwood Fire Doors give you the maximum in durability, dimensional stability and resistance to vermin and decay. And you get all this in a light, easily-manageable door. For example, the 3′ x 7′ size weighs only 84 lbs.

THE WELDWOOD STAY-STRATE DOOR is similar to the Weldwood Fire Door but is without the fireproofed edge banding. This door does not have the Underwriters' Label, but the incombustible Kaylo core gives it a high degree of fire protection. It is recommended for use where a labeled door is not specified, but where fire resistance is a desirable extra advantage. It is offered in the same wide variety of beautiful hardwood facings.

**Reg. Trademark, Owens-Illinois Glass Co.*

Write for interesting, informative literature

United States Plywood Corporation carries the most complete line of flush doors on the market including the famous Weldwood Fire Doors, Weldwood Stay-Strate Doors, Weldwood Honeycomb Doors, Mengel Hollowcore Doors, Mengel and Algoma Lumber Core Doors, 1⅜" and 1¾" with a variety of both foreign and domestic face veneers.

Weldwood®

WELDWOOD FLUSH DOORS

Manufactured and distributed by

UNITED STATES PLYWOOD CORPORATION

55 West 44th Street, New York 18, N. Y.

Branches in Principal Cities • Distributing Units in Chief Trading Areas

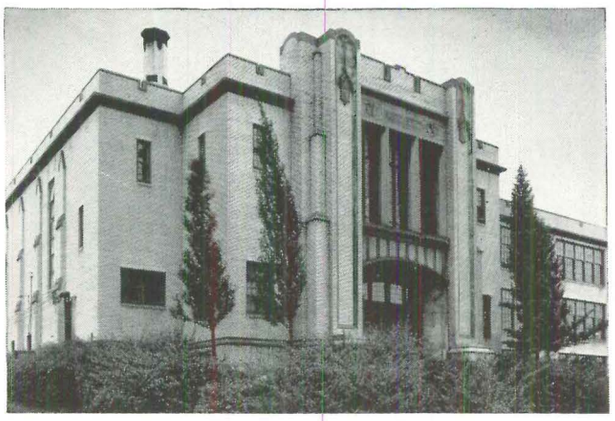
Dealers Everywhere

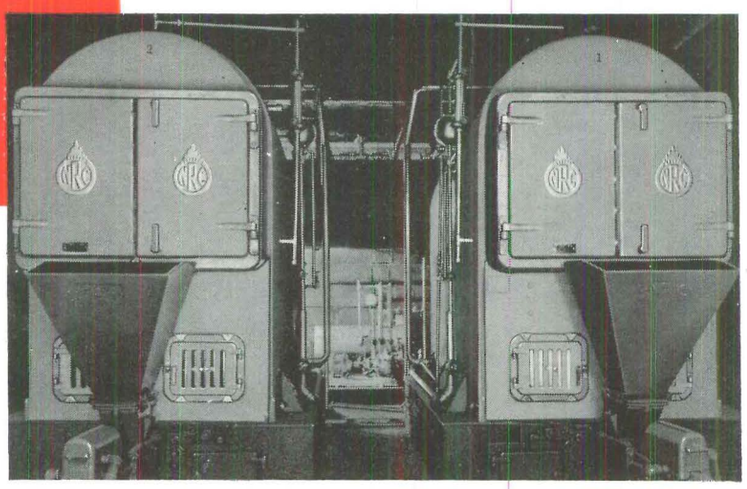
Dependable Warmth and Comfort

FOR MONONGAHELA HIGH SCHOOL'S 900 STUDENTS

PROVIDED BY

NATIONAL COMMERCIAL STEEL BOILERS





View of the two No. CA-6630 NATIONAL Commercial Steel Boilers with stokers in the Monongahela High School, Monongahela, Pa. Myers & Myers, Monongahela, Pa., Heating Contractors.

Monongahela High School has modernized its heating system by installing two No. CA-6630 National Steel Boilers to furnish heat for its 22 class rooms, auditorium, gymnasium and cafeteria. These National boilers replace two older front smoke outlet type steel boilers.

The new boilers are stoker-fired and furnish 20,000 square feet of radiation distributed throughout the building by cast iron radiators.

During the 1950-51 winter, which turned out to be unusually severe in Western Pennsylvania, these boilers have operated efficiently and satisfactorily, delivering ample heat throughout the school, on a job where the heating system must be reliable day after day.

The school is planning to install another similar boiler in the near future when the proposed Junior High School addition is built—which will add 16 rooms, a domestic science room, machine and woodworking shop and enlarge the auditorium and gymnasium.

NATIONAL Commercial Steel Boilers are designed and engineered especially for large installations where extra heating capacity is a primary consideration. Their durable construction and economical performance meet or exceed all requirements of recognized authorities and codes, including A.S.M.E. and S.B.I. . . . and they carry the "Hartford Mark" of inspection.

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Cast iron National Heat Extractor boilers in sizes ranging in Net I-B-R Ratings from 170 to 10,300 sq. ft. of steam and from 270 to 16,480 sq. ft. of water.



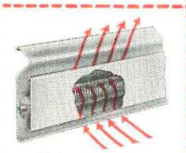
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The new, all-in-one automatic National Packet Heating Unit for small homes, motels, diners and stores.



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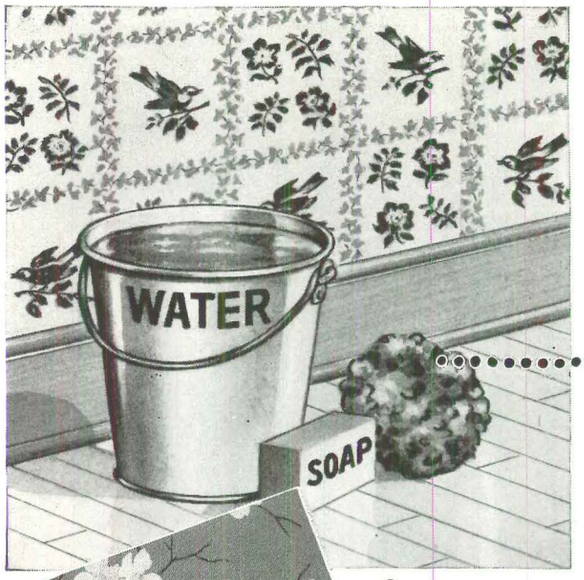


National Unit Heaters

For further information on NATIONAL Commercial Steel Boilers or other National Products and accessories write for Bulletin No. 507 A.1.A. No. 30-C-1.

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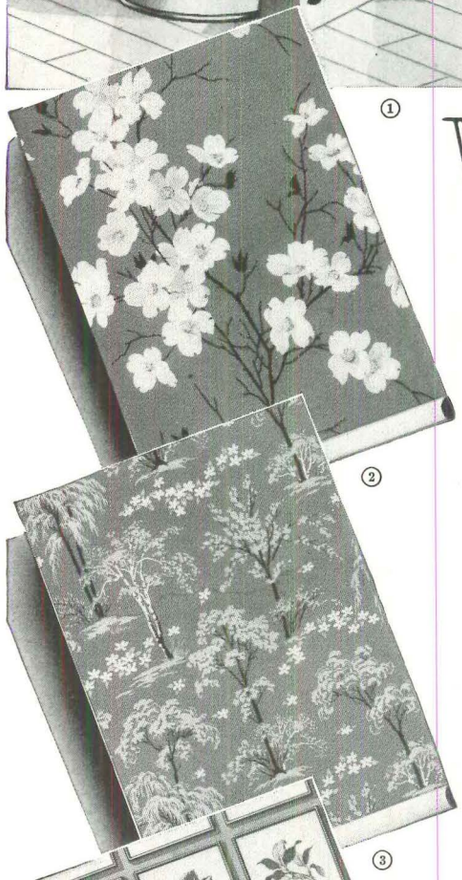
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If you've paid a big redecorating bill lately—if you know how maintenance bills can pile up, then you'll be happy to hear about sensational stainproof Varlar wall covering. For Varlar is the beautiful and practical choice—it hangs as easily as wallpaper, washes like tile, washes like new up to 25,000 times!

And Varlar is available in many lovely new styles—now a total of 151 decorator-selected patterns—traditionally Varlar.

See Varlar today—see for yourself how impossible it is to stain it. Mercurochrome, indelible ink, alcohol, disinfectants, catsup, even hot grease wash off with just soap and water.

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Patterns shown are: ① The Merry Song Bird, ② Dogwood Tree, ③ Meadow Lane, ④ Velvet Paintings.

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VARLAR—a Division of United Wallpaper, Inc., Merchandise Mart, Dept. MB-4, Chicago 54, Illinois

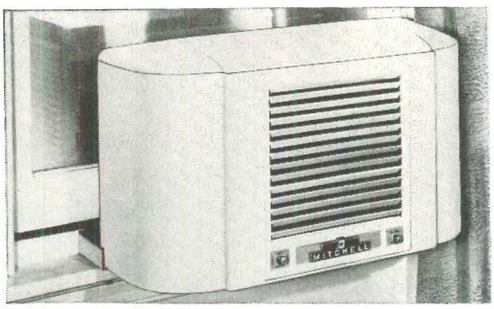
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PRODUCT NEWS



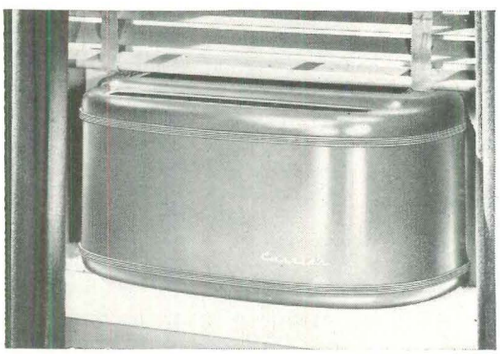
ROOM AIR CONDITIONER can be placed inside 22″ window.

Among the Mitchell air conditioners introduced this season is a ⅓ h.p. room model, the M-131, modestly priced at $229.95. Standing about 13″ high and 31″ deep, the conditioner will fit in a double hung sash window as narrow as 22″. The mount's construction simplifies installation and does away with window filler panels. Built of 19 gauge steel, the unit is finished in beige or ivory. One of its features is an improved cooler which is said to assure a more concentrated flow of refrigerant through the system. The M-131 has a cooling capacity of 4,200 Btu per hr. It also dries and filters the air.

Manufacturer: Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.

ROOM AIR CONDITIONERS are easy to install on cradle mounting.

A new hinged cradle type mounting simplifies the installation of Carrier's three window sill air-conditioners. To set one of the new models in place, the hinge is screwed to the sill and outboard supports fastened. The entire chassis then slides in or out of the mounting for inspection and servicing. The cradle may be removed by releasing the wing nuts on the supports and pulling the pins on the hinge, or it can be swung inward so that the window can be lowered for washing. Finished in copper-beige, the ½, ¾, and 1 h.p. models (known as Carrier "72," "106," and "130") will handle cooling loads up to 7,200, 10,600, and 13,000 Btu per hr. They are priced at $349.95, $429.95 and $499.95. All three units dehumidify and filter the air as well as cool it. They have hermetically sealed compressors, adjustable outlet louvers for draftless diffusion, replaceable filters and sound-insulated cabinets.

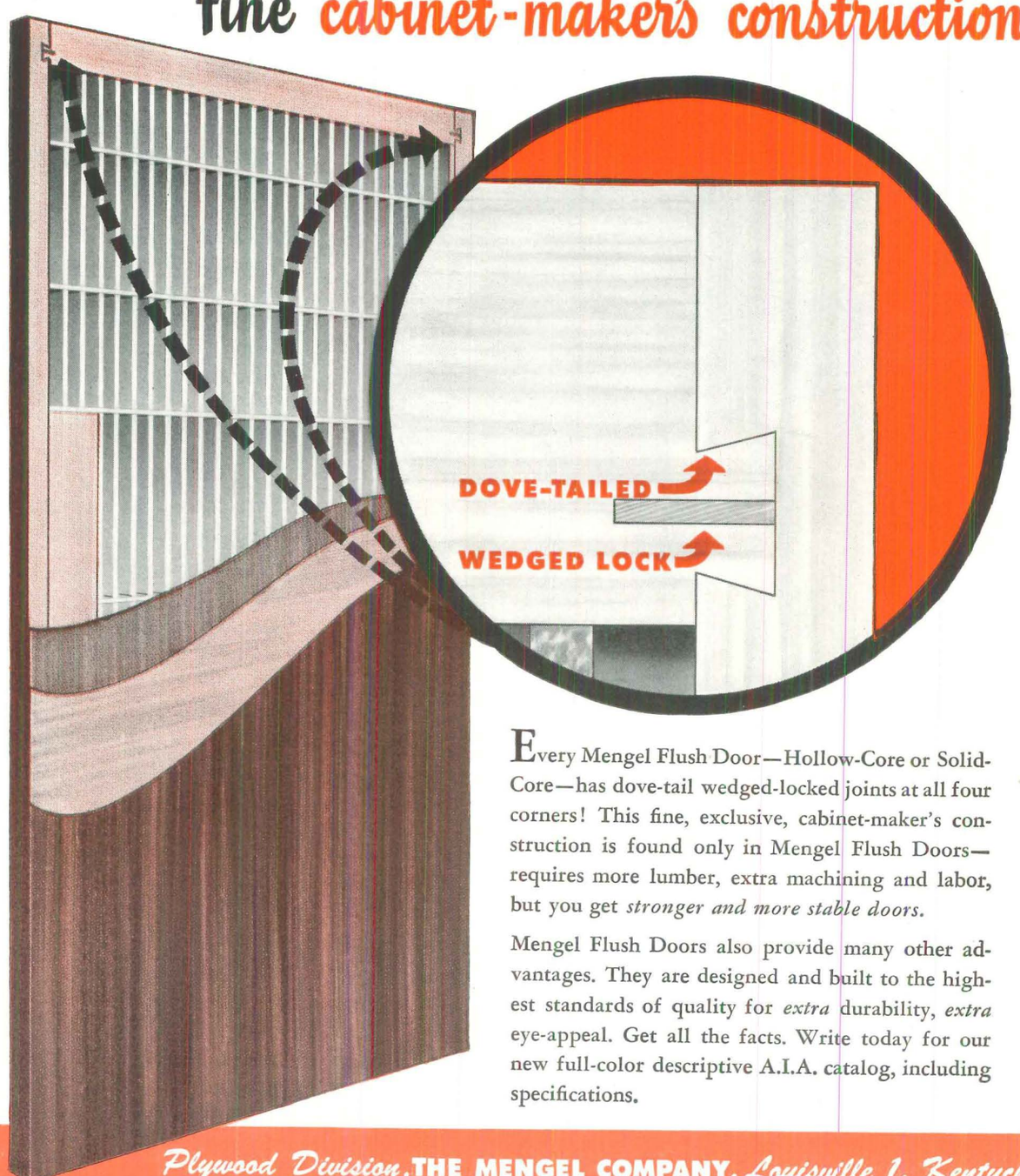


Manufacturer: Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y.

(Technical Literature, page 240)

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Every Mengel Flush Door—Hollow-Core or Solid-Core—has dove-tail wedged-locked joints at all four corners! This fine, exclusive, cabinet-maker's construction is found only in Mengel Flush Doors—requires more lumber, extra machining and labor, but you get *stronger and more stable doors.*

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Plywood Division, **THE MENGEL COMPANY,** *Louisville 1, Kentucky*

FIREPLACES. How to Plan and Build Your Fireplace. Lane Publishing Co., 576 Sacramento St., San Francisco, Calif. 100 pp. 8¼ x 10¾". $1.50.

An excellent how-to-do-it book for the layman, this publication should be valuable to the architect and builder as a comprehensive design study on fireplaces and chimneys. After a humorous historical summary of home fireplaces' rise, fall and rise, in the chapter *Home is Where the Hearth Is*, the book goes on to treat practical aspects of fireplace construction such as wood storage, hot air circulating units, and fuels and repair. It contains about 300 photographs and sketches of actual fireplaces ranging from modest and simple facings which fit unobstrusively into a conventional room to giant-size decorative and useful metal hoods, and freestanding firepits for contemporary architectural settings. In addition to living room installations, examples are shown in a variety of materials for cabins, bedrooms, dining rooms, kitchens, outdoor-indoor rooms and terraces. Construction details for many of them are presented alongside the photos and a complete diagram for a one-story fireplace and chimney is bound into the back of the book. Easily interpreted drawings are used to show how to put a fireplace together and how to add one to an existing structure.



PLYWOOD. Architectural Grade Weldwood Plywood. United States Plywood Corp., Weldwood Building, 55 W 44th St., New York 18, N. Y. 32 pp. 8½ x 11".

This attractive manual is devoted to ¾" architectural grade Weldwood plywood. A complete analysis of the types, characteristics and uses of architectural grades of plywood, the booklet provides useful reference information in a single easy-to-read source. Accompanied by photographs and excellent two-color details, the text describes popular types of plywood and veneer cuts, veneer matching, data on corners, joints, curved panels and counterfront layouts, and gives specifications. Two charts indicate the availability of various woods, and the characteristics, origin, and length range of 36 kinds of veneer.

GRANITE. Standard Specifications for Granite. National Building Granite Quarries Assn., Inc., 114 E. 40th St., New York 16, N. Y. 8 pp. 8½ x 11".

The 1951 revised edition contains standard specifications for granite as developed by the National Building Granite Quarries Assn. A color and grain chart provides a handy reference to the various granites quarried by members of the association.

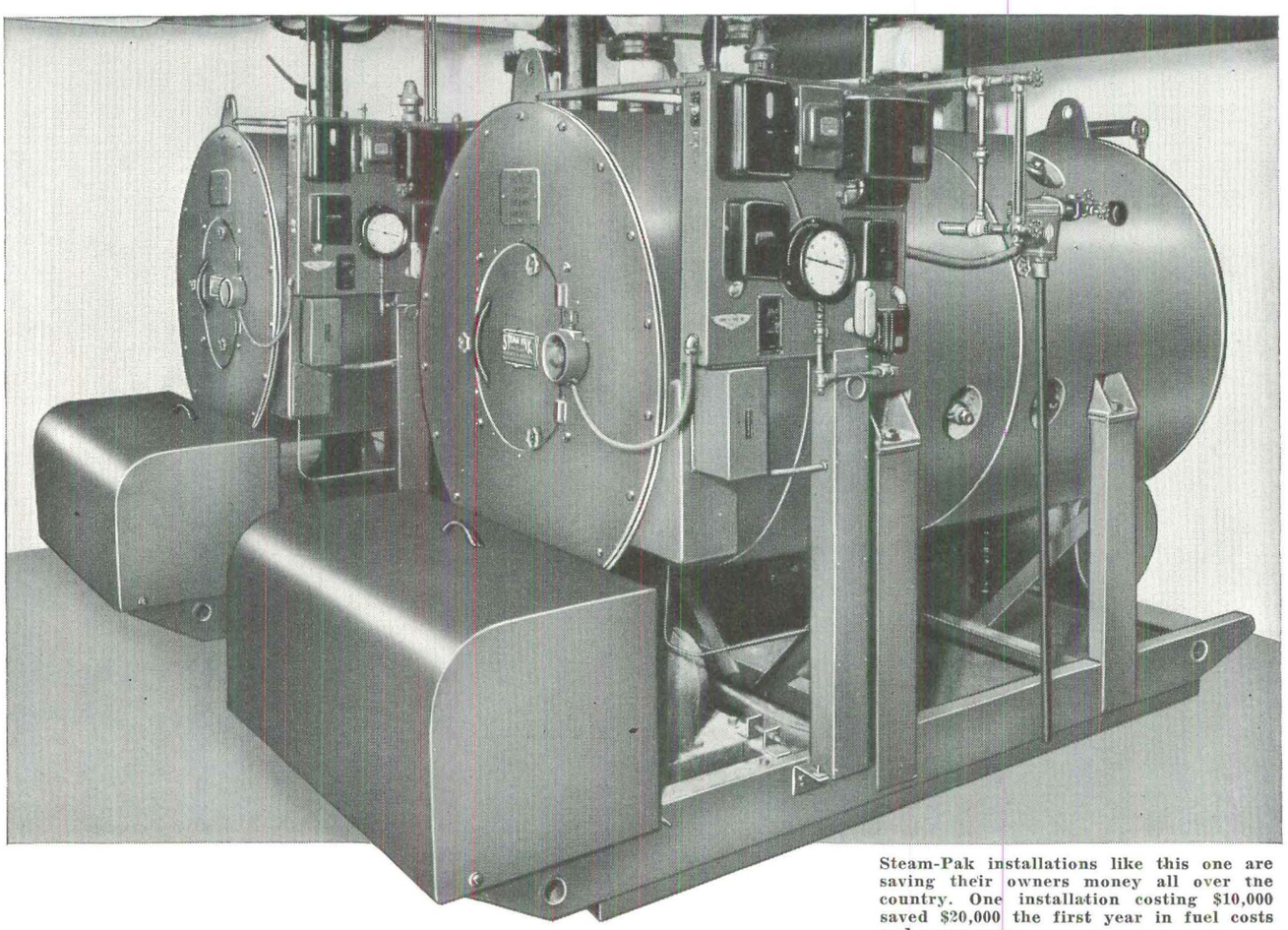
DOORS. Ellison the Balanced Door. Ellison Bronze Co., Inc., Jamestown, N. Y. 12 pp. 8½ x 11".

Pivoted at top and bottom, the Ellison bronze and glass doors are described as handling effortlessly and surely. They are also said to reduce projection into the lobby space and out toward the sidewalk by as much as 50% over conventional entrance doors. Details, specifications and a list of authorized representatives are contained in the brochure.

PRECAST CONCRETE. Long Span Flexicore for Floors and Roofs. The Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio. 8 pp. 8½ x 11".

The latest catalogue on Flexicore prestressed concrete floor and roof slabs includes a load chart, an explanation of how Flexicore permits heavy loads on long spans, and diagrams which illustrates how the slabs may be used with many types of construction. The pamphlet also covers ways to install a hot water radiant heating system and a warm air split system combining circulating air with a radiant heated floor.

(Continued on page 246)



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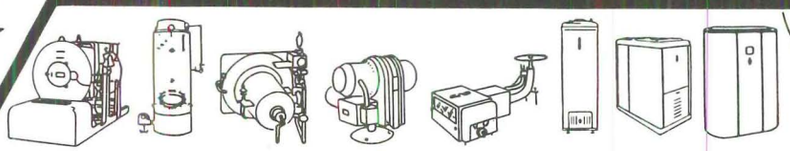
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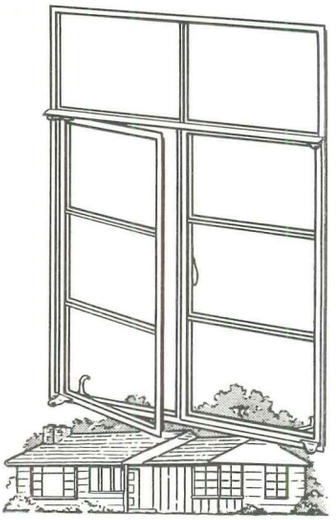
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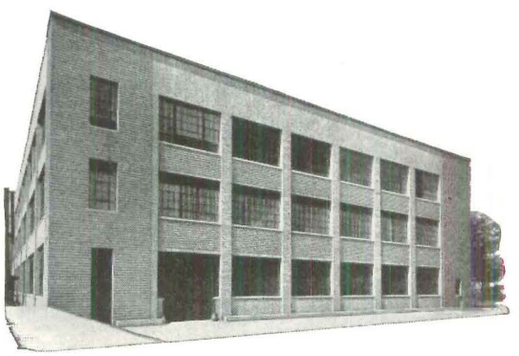
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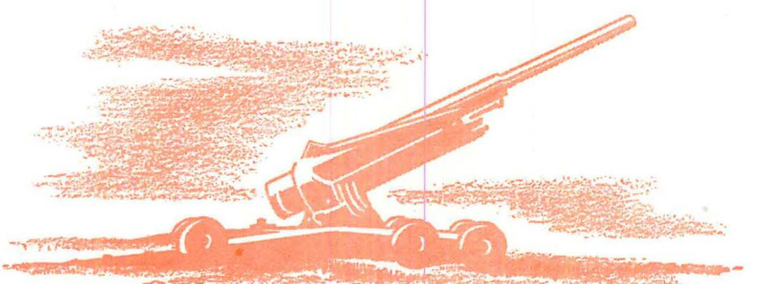
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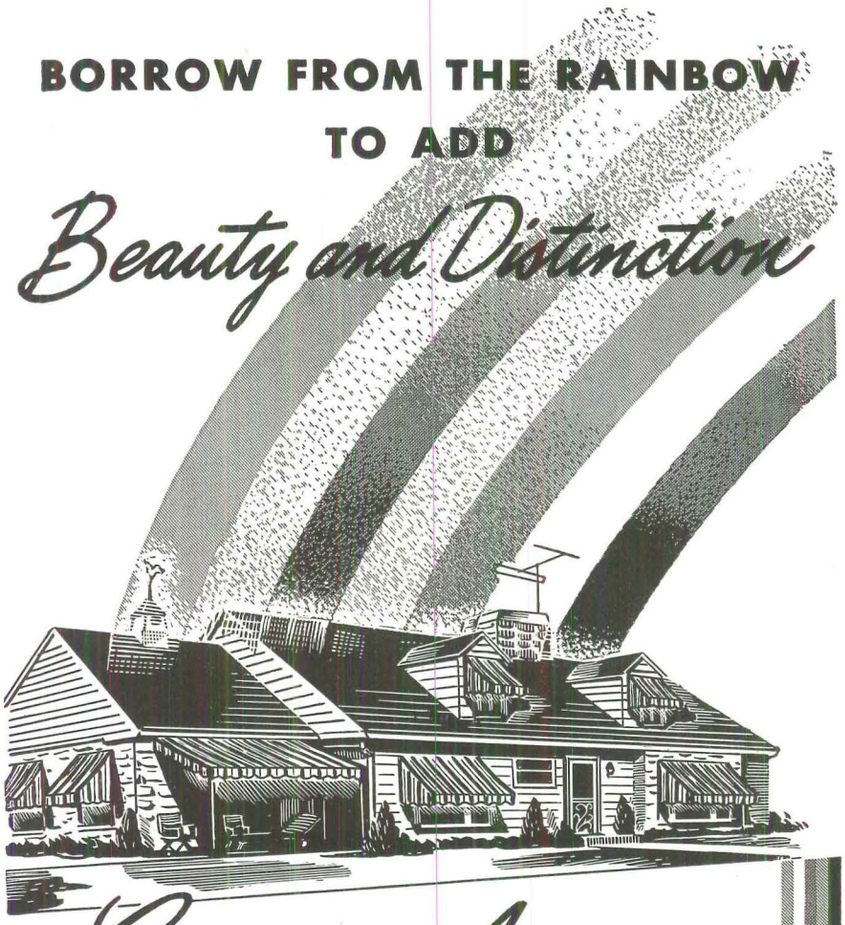
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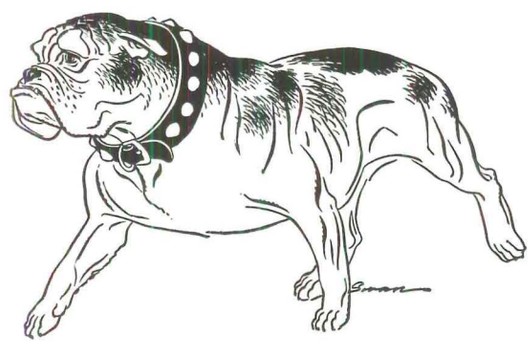
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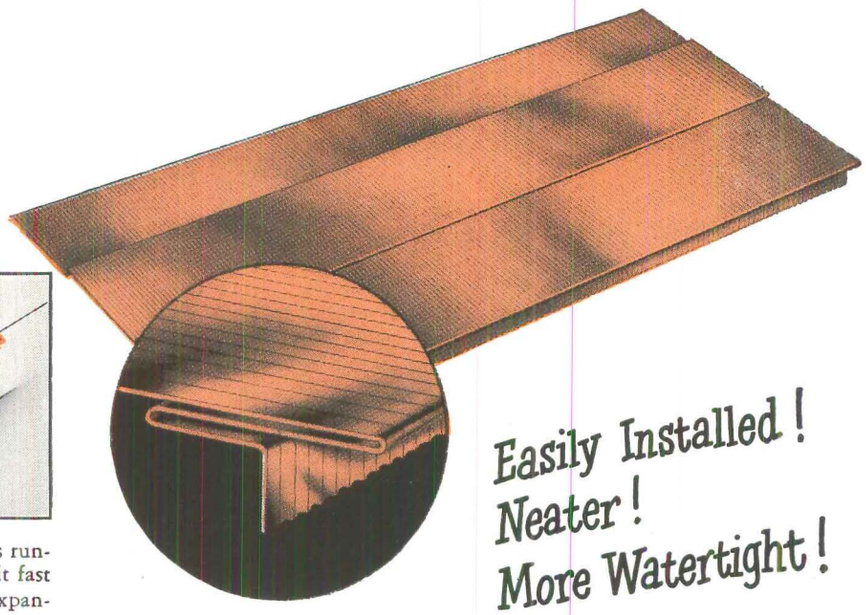
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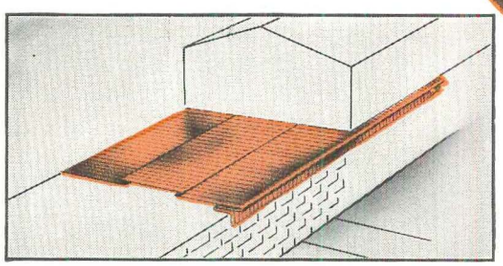
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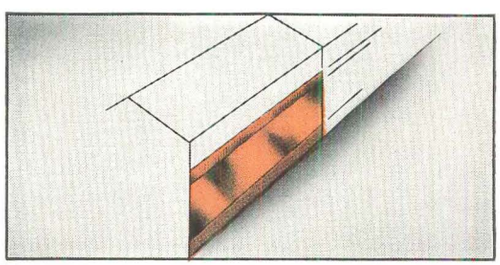
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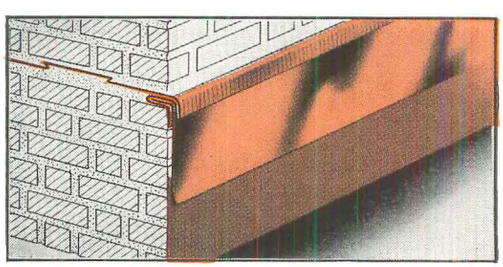
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*Patent Pending

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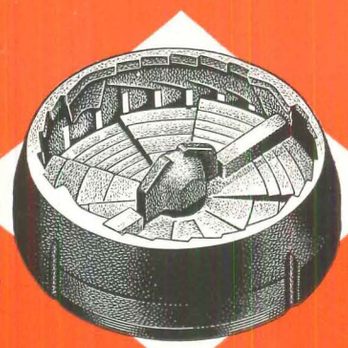
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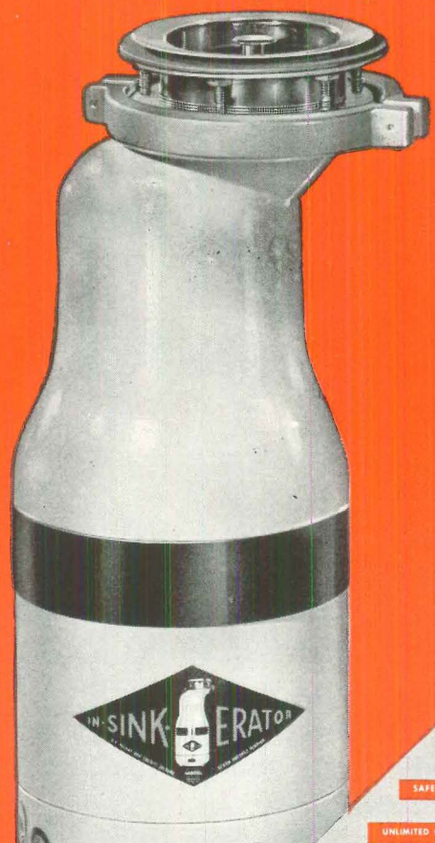
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TECHNICAL LITERATURE

WIRING AND LIGHTING. Electrical Living and How to Have It (B-4762). Westinghouse Electric Corp., Box 2099, Pittburgh 30, Pa. 24 pp. 8½ x 11". 10 cents.

Lighting schemes and modern floor plans of kitchens and laundries for new and remodeled homes are illustrated in this new booklet. Written to provide builders and architects with data on the convenience and comfort derived from fully planned electrical systems, the publication makes room by room studies of wiring and lighting that add to efficiency and appearance. Proper arrangement of kitchen appliances, varied uses for the laundry room, unusual lighting effects for the bedroom and convenient features for the bathroom are pictured. Principles of good kitchen design are presented as well as a suggested layout for wiring circuits and load centers. Also covered are methods of including new appliances in the mortgage cost of a new home, and adding the cost of appliances and modernization to an existing mortgage.

LIGHTING. Contemporary Lighting in Modern and Traditional Interiors. Illuminating Engineering Society, Publications Office, 51 Madison Ave., New York 10, N. Y. 58 pp. 8½ x 11". $1.

Integrating adequate home lighting with good decoration techniques, the new I.E.S. book offers many lighting ideas for homes furnished in contemporary and traditional styles. A practical working guide for homebuilders and designers, the book contains photographs of interiors and sketches of construction details of lighting applications for the principle rooms in a house. Decorative, cove, recessed and window lighting are treated and uses of wall and ceiling fixtures, lamps and fluorescent tubes discussed.

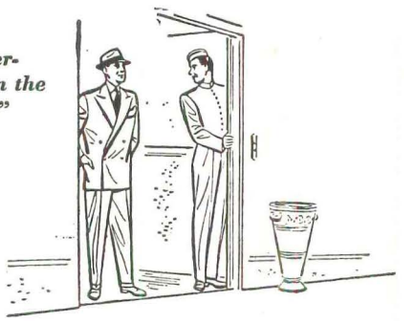
COOLING TOWERS. Aqua-Therm Industrial Cooling Towers. Aqua-Therm, Inc., 732 Albany St., Dayton 1, Ohio. 4 pp. 8½ x 11".

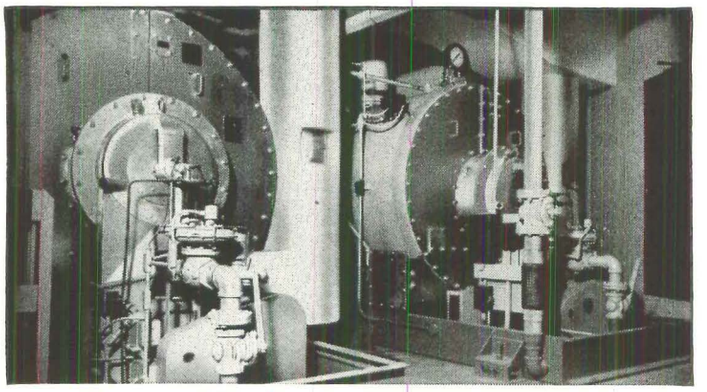
The distinctive feature of the cooling tower described in this bulletin is said to be its special packing bed of corrosion resistant ceramic saddles. This stoneware fill provides a large surface area in relation to the total volume thereby reducing tower height and, consequently, pumping h.p. up to 50%. Technical data and a typical cooling tower problem are included.

INSULATION. How to Do It. Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill. 12 pp. 8½ x 11".

Prepared for architects, engineers and contractors this illustrated booklet explains the proper application of all forms of Zonolite vermiculite. Design data, methods and specifications outlined in the publication are the result of laboratory research and field tests. Uses of the lightweight aggregate are described as insulation fill, plaster and plaster finish aggregates, acoustical and insulating plastics and as concrete aggregate.

"The Boiler-Room? — On the Roof, Sir"

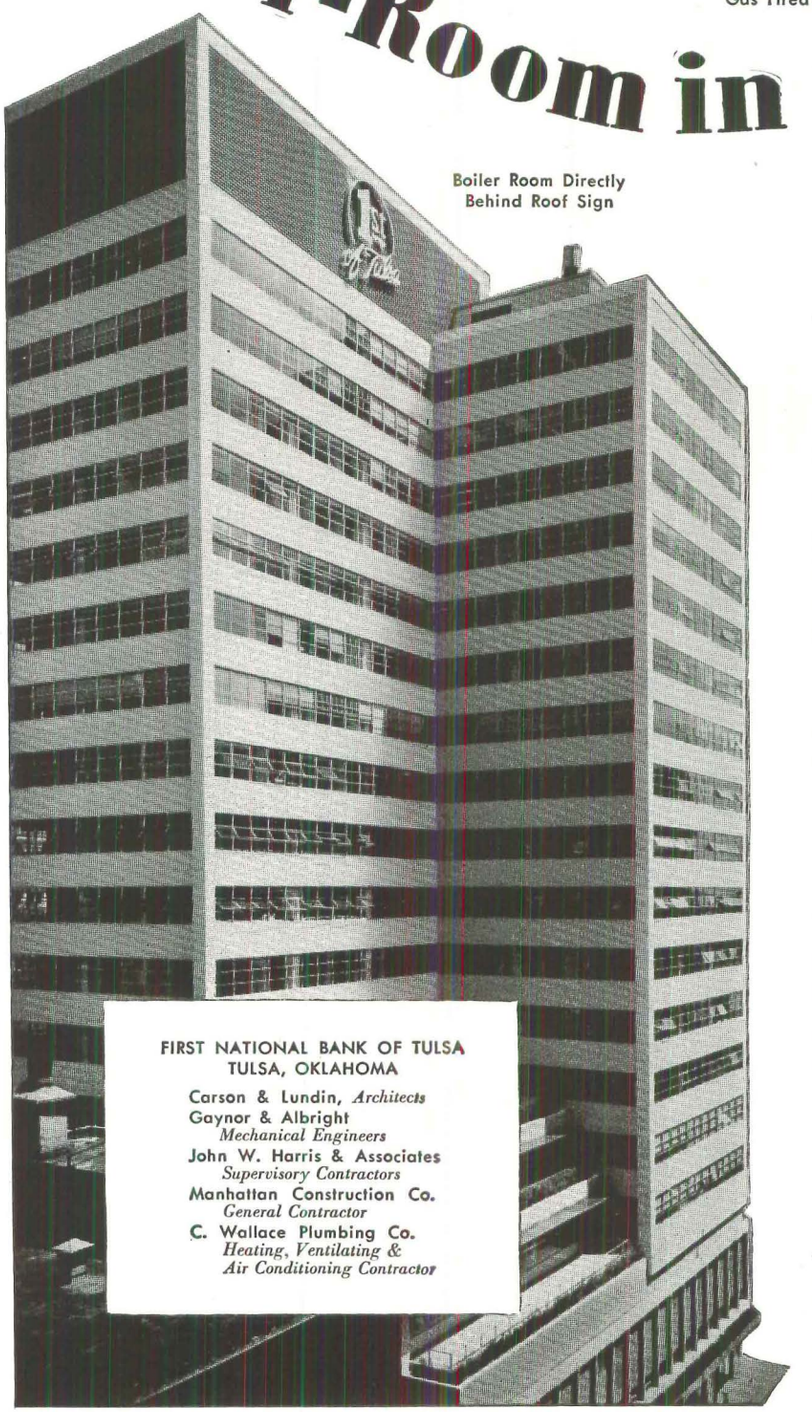




The "First of Tulsa" Boiler Room — Two Cleaver-Brooks 200 hp. Gas Fired Boilers

Boiler-Room in the SKY..

Boiler Room Directly Behind Roof Sign



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TULSA, OKLAHOMA

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FURTHER PROOF OF CLEAVER-BROOKS BOILER FLEXIBILITY

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For very good reasons the boiler-room was placed at roof level. (Boiler-room is directly behind roof sign at top of building, instead of conventional location in basement.) First, since it was a bank building, basement space was extremely valuable for vaults, storage, and air conditioning equipment. Then, too, with the fresh air intake on the top of the building, a considerable amount of piping was eliminated by placing the boilers at the same point. Since Cleaver-Brooks boilers require only a simple vent for carrying off combustion gases, long stack runs were eliminated, leaving additional valuable space within the building.

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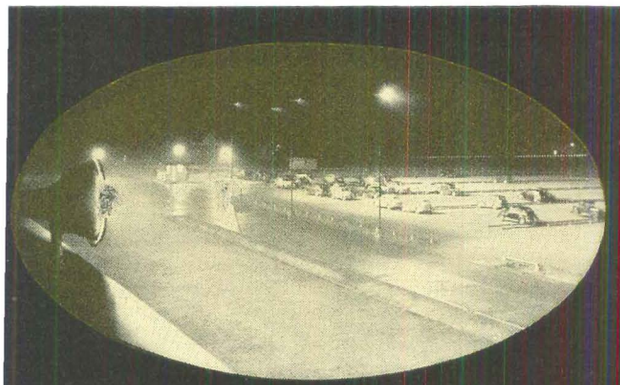
Cleaver-Brooks Self-Contained Boilers are available for oil, gas, combination oil and gas firing, 15 to 500 hp, 15 to 250 p.s.i., for heating and processing loads. Write for the catalog.

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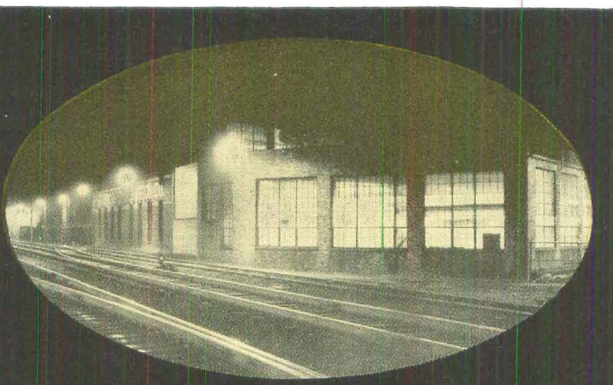
Cleaver-Brooks
STEAM BOILERS
The First and Finest of their Class

protect with LIGHT

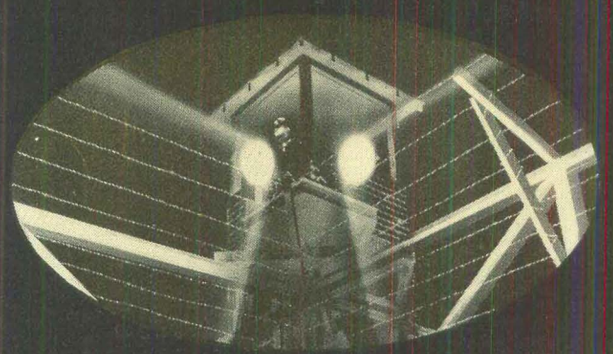
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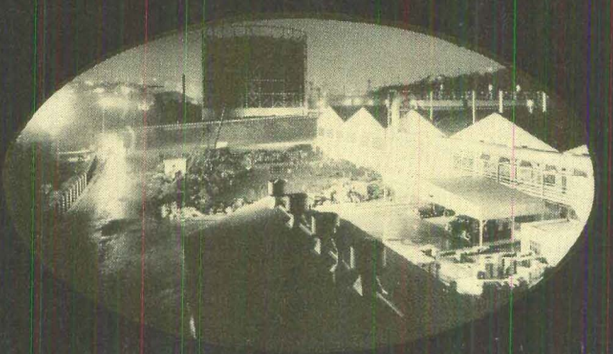
Shorten shift change time by providing plenty of illumination in the parking area.



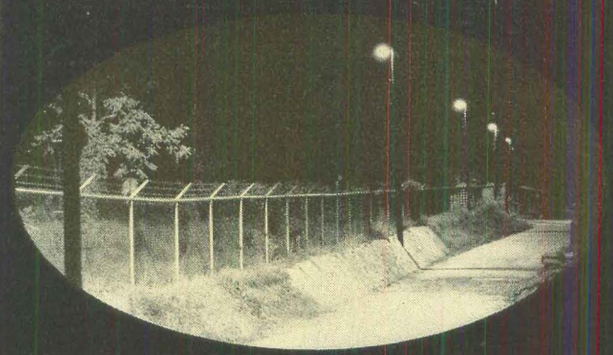
Insure safe handling in shipping areas by floodlighting this working space.



Minimize the number of guards needed by floodlighting critical production areas.



Safeguard warehouse and foundry by floodlighting the building entrance yards.



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Protect late shift workers by providing plenty of light at building entrances.

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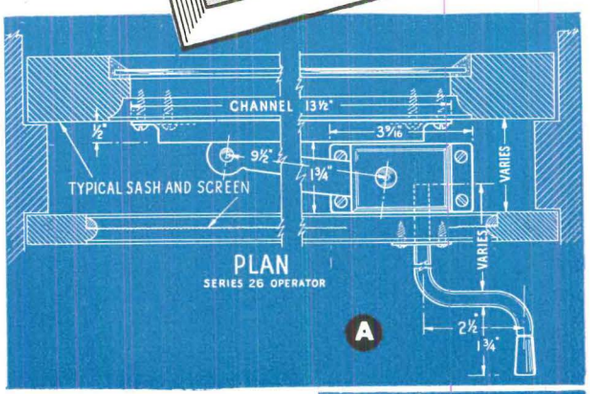
PLANNED LIGHTING SYSTEMS

PORTRAIT OF A *Royal Family*

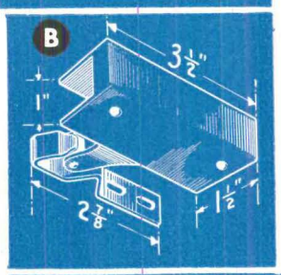


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A Win-Dor Casement Window Operators for outswung wood casement sash have no equal. They make any wood casement window the most convenient and modern window there is. There is merit in the exclusive Win-Dor design and construction with bronze worm and bushing. There is long wear, and there is always user satisfaction. Shown at left is typical plan of Series 26 installation. See Sweet's for complete details and other types.

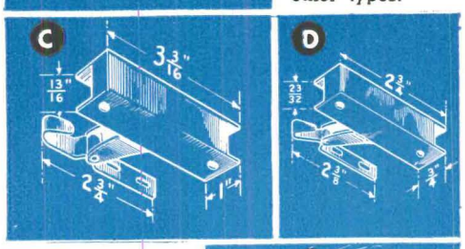


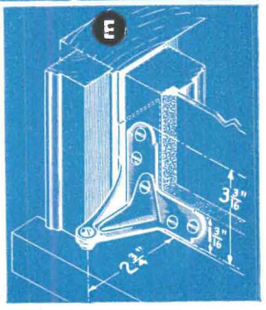
B Here is the large size No. 45 Win-Dor Snugger, the automatic top-closer that reaches out and pulls sash shut.

C Medium-sized Snugger does the same job on light sash and is the choice of thousands of architects for cupboard and closet door closing.

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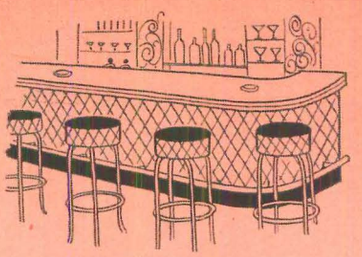
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Bolta-Quilt*

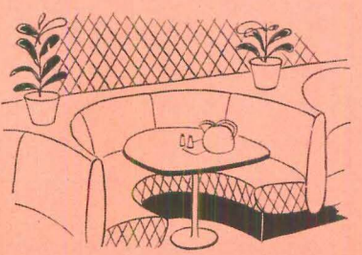
means Covered with lasting Beauty

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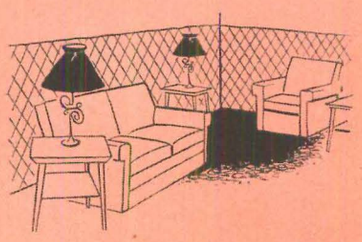




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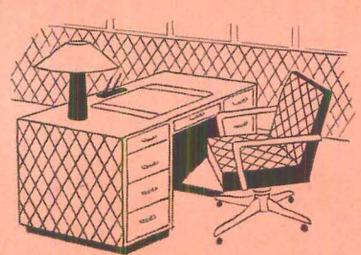
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(Continued from page 137)

schools, and living conditions is a timeless one, and this is the basis of the Swedish attitude."

Apartment houses are the major architectural form, since an amazingly high proportion of the Swedish people are apartment dwellers, and the best thing about these apartments besides their general good taste (and balconies) is their location in Swedish cities where municipal ownership of land has prevented the commercial pillage which has been inflicted upon most of the other cities in the world. ". . . The remarkable feature of Swedish housing is not that it takes advantage of its unequalled sites — any thoughtful design would do that — but that it has these unequalled sites to take advantage of. . . ."

Kidder Smith is one of the very small crew of specialists whom architects all over the world have trusted—and trusted rightly—to show them buildings which they all cannot travel to see. These specialists who are both architects and photographers are important; their insight is a periscope for the architectural profession.

Comparable in format to his *Switzerland Builds* (THE MAGAZINE OF BUILDING, Mar. '50), Kidder Smith's new book on Sweden first presents the country's architectural inheritance, then its outstanding new buildings. Although the layout of the book sometimes fails to contribute to its impact, the 683 beautiful photographs (seven in full color), the clear descriptive prose and the crisp floor plans and detail drawings comprise a splendid report on Sweden's important place in the architectural world.

BUILDING FOR INVESTMENT. By Clinton H. Cogwill. Reinhold Publishing Corp., 330 W. 42nd St., New York 18, N. Y. 482 pp. Illus. 6 x 9 in. $7.

A broad, basic look at the business of building, this book is admittedly an attempt to answer "the heads and deans of architectural schools who requested a textbook on building finance." It was developed by the head of the Department of Architecture at Virginia Polytechnic Institute from notes he has used in his classes on business administration and public administration. Judged against this purpose and background, the book is quite successful. It is a comprehensive textbook for students, beginners and teachers.

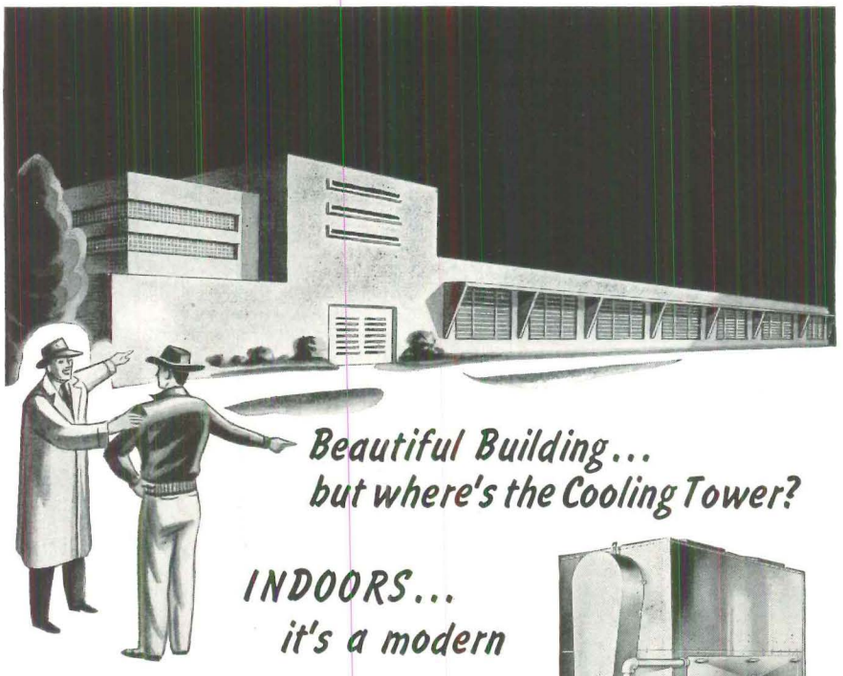
On the other hand, aside from its numerous charts and tables, the book has little to offer experienced practioners in the building industry. Nor will they find the text interesting reading. The slow, elementary pace is set by the book's very first paragraph:

"Building for investment or for pleasure is a cooperative venture. One of the cooperators is the owner, who is also known as the party to a construction contract. Other cooperators are known as the architect and the contractor. The owner may be an individual, a partnership, a corporation, a public or private institution, or a government at the local, state, or national level. If the owner is an organization which is too large to function as a unit, the part of the owner is taken by an official, a board, or a committee. When the ownership rights and duties are taken nominally by a large board or a committee, they are often delegated to a small executive committee or to an official.

"On of the most important functions of the owner in a building operation is the conception of an idea which may be the real beginning of the building project. It is possible, of course, that the idea might come from an architect, a contractor, a builder, a friend or employee, or a realtor. . . ."

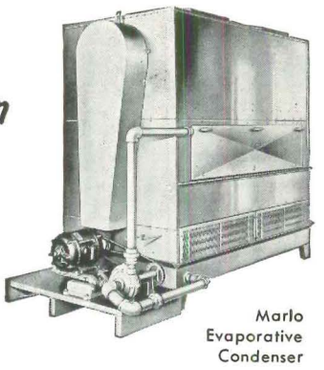
Thus the owner is introduced. Other chapters cover the architect's and investor's parts in the building operation, discuss the various problems involved in buildings by type and finally consider the intricasies of site selection, management, law, ethics and building investment.—JH.

(Reviews continued on page 258)



Beautiful Building...
but where's the Cooling Tower?

INDOORS...
it's a modern
compact
MARLO unit



Marlo
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Architects find they can protect their original building design by specifying Marlo Cooling Towers and Evaporative Condensers—*space-tailored* for easy installation indoors or on the roof below the skyline.

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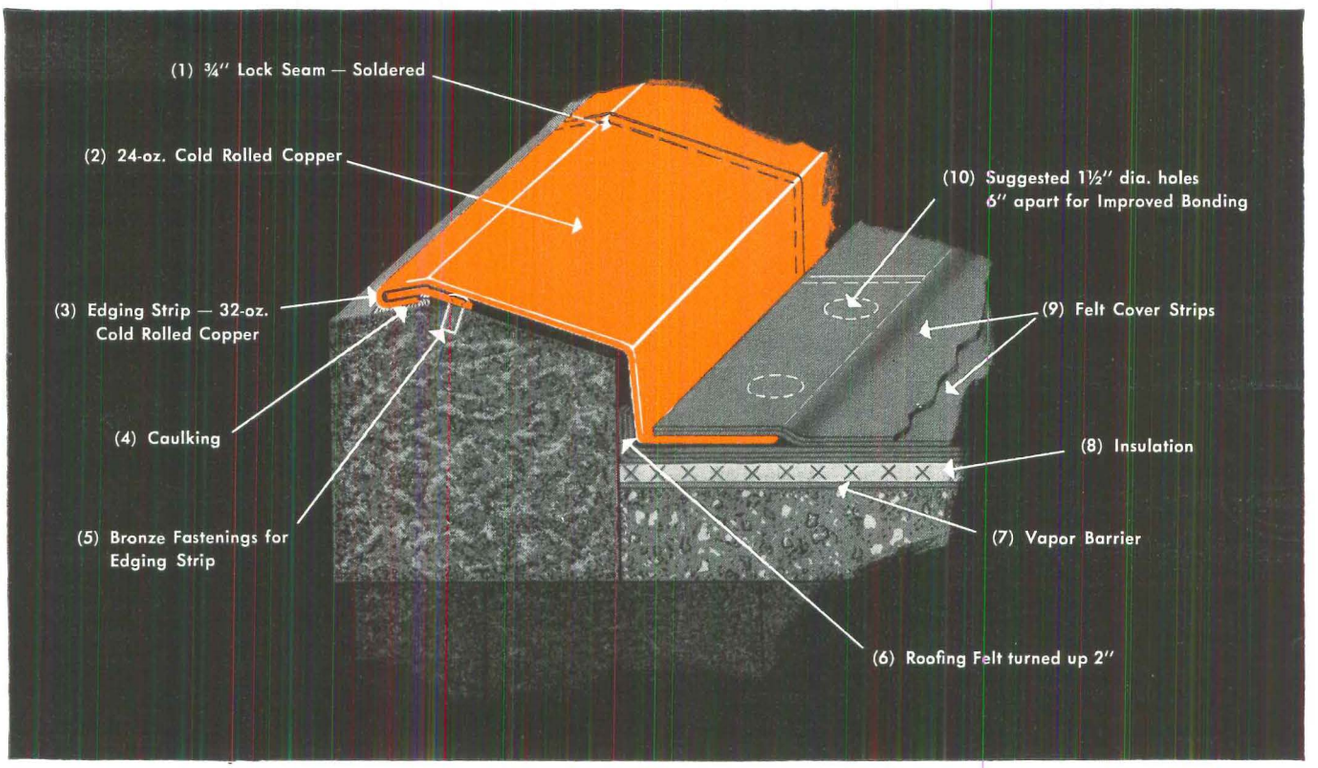
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Details of the copper construction illustrated in this sketch are available on 8½"x 11" sheets convenient for filing. Other sketches, showing how a little copper can go a long way in achieving good building construction, will be featured in subsequent advertisements.

Copper flashing at roof— no parapet

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In Canada: *Anaconda American Brass Ltd., New Toronto, Ontario.*



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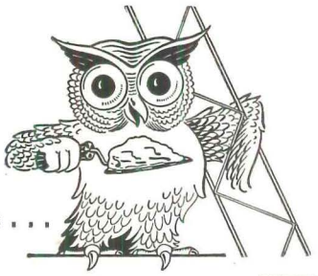
ALUMINUM! NO RUST AND NO PAINTING! Durall *keeps* its good looks, will not rust or stain house.



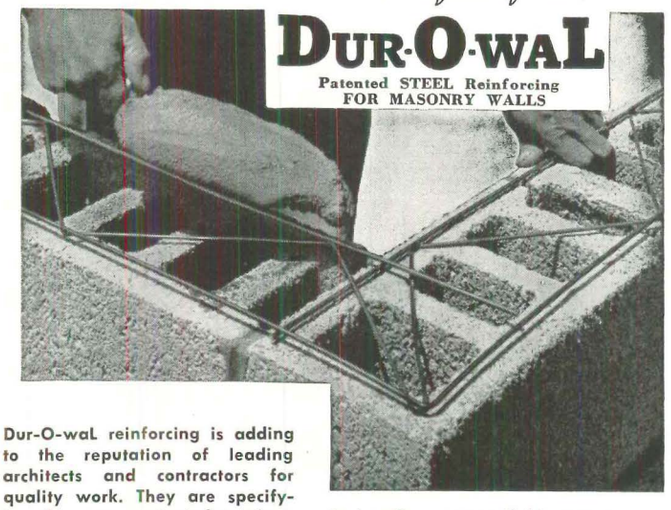
GOOD LOOKING AND SNUG-FITTING! Durall stays taut and trim—always keeps out insects *permanently!*

DURALL Tension Screens are made by one of the oldest manufacturers of wire screening. For complete information, write the New York Wire Cloth Co., Dept. AF-4, 445 Park Avenue, New York 22, New York.

A WORD TO THE WISE BUILDER



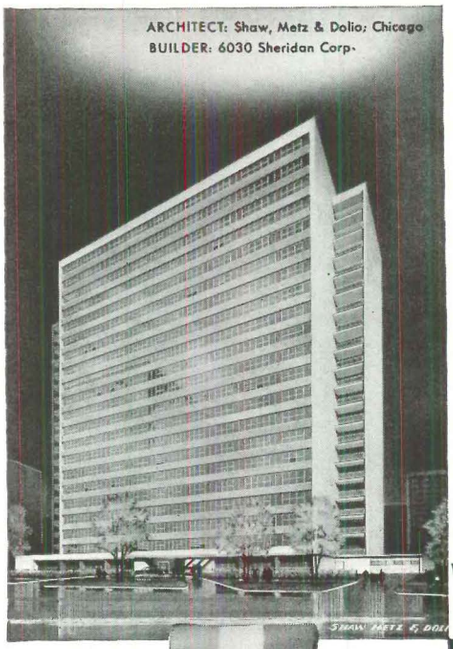
that means Better Masonry Walls . . .



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Dur-O-wal is easy and fast to handle; assures tight corners. It is electrically welded, economical, dependable.

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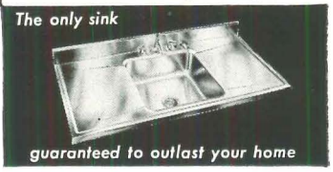


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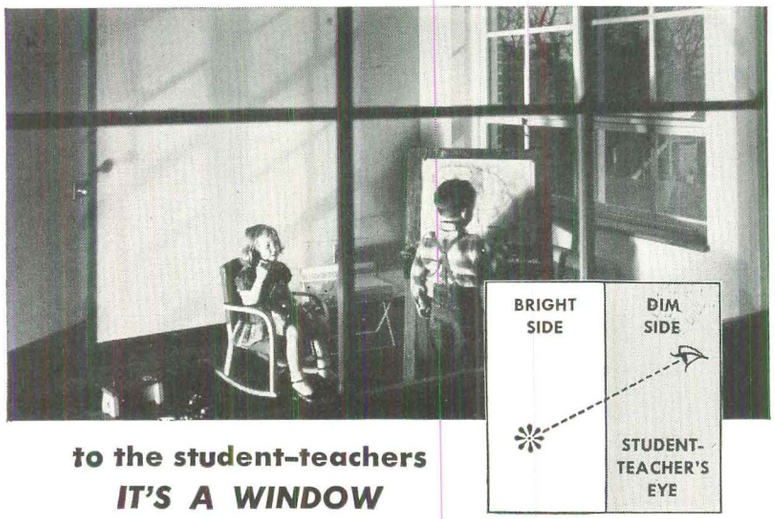
Only a carpet specialist can predict the wear any carpet weave will give, under various traffic conditions. Only an expert can evaluate the merits of the different weaves, within a given price-range. Your local Alexander Smith-Masland Carpet Contractor is a carpet authority. Consult him. His years of experience can save your time, and your clients' money.

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C. H. Masland

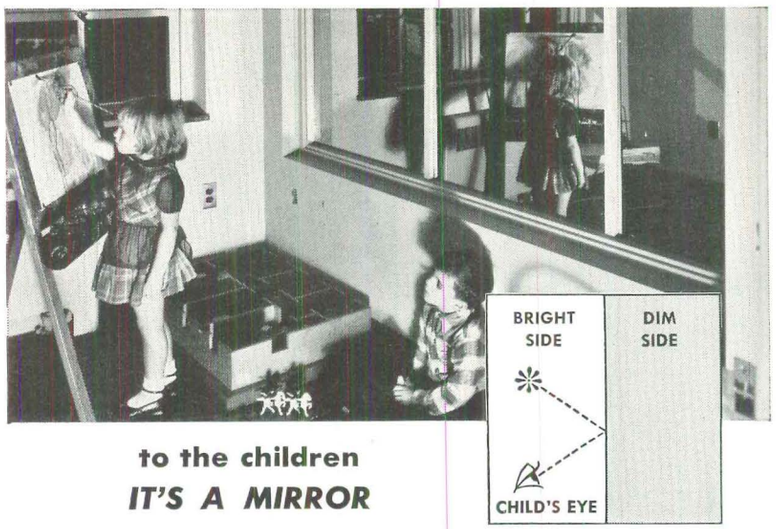
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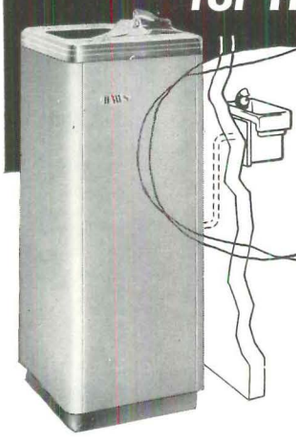
This principle of sight unseen is one you can use in many places. In schools, hospitals, institutions, stores, banks, offices, entrance doors—wherever you wish to provide a means for observing people without their suspecting it—*Mirropane* can be highly useful as well as decorative. Write for full information.

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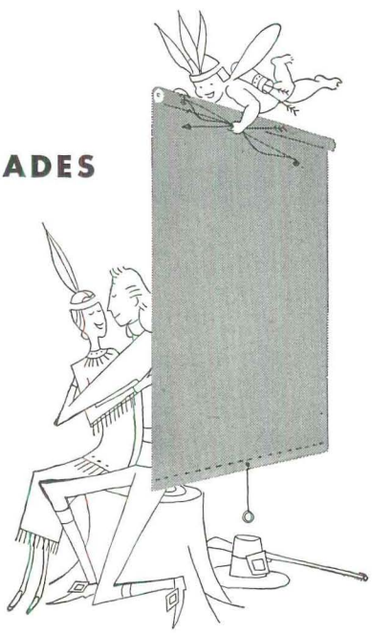
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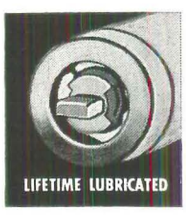
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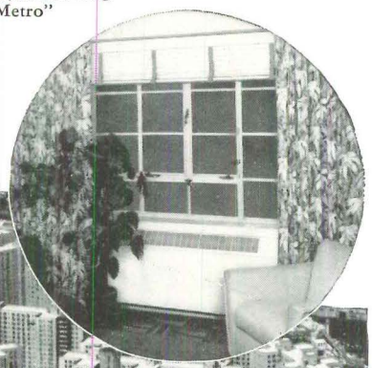
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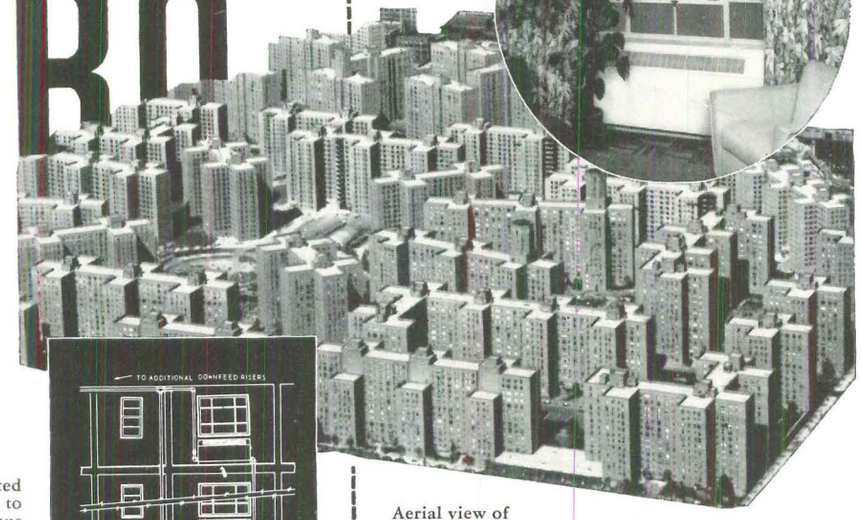
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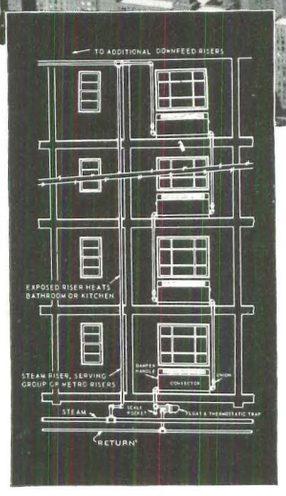
SINGLE-RISER HEATING

Living room in Stuyvesant Town Housing Project showing attractive "Metro" convector. "Metro" piping is concealed behind draperies.





Aerial view of Stuyvesant Town (foreground) and adjacent Peter Cooper Village, New York.



Single-riser provides an uninterrupted path for flow of steam from top to bottom of building. A continuous pipe passes down through overlying rooms . . . is offset in each room into a convector or baseboard.

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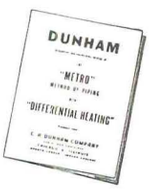
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PUMPS, TRAPS, VALVES

LAMP DESIGN COMPETITION features fanciful flexible fixtures for contemporary homes.

Two years ago in a *Retailing Daily* interview Architect Marcel Breuer answered a query about the absence of lamps in his House in the Garden (THE MAGAZINE OF BUILDING, May, '49) with the remark that light and lighting fixtures had to be designed into structure and that there were no portable lamps suitable for contemporary architecture. Lamp Designer and Manufacturer Yascha Heifetz (no relation to violinist Jascha) wielded a white glove across the trade paper's columns a few days later and soon after, the two adversaries met in formal debate. In the friendly verbal battle, Heifetz was dramatic, Breuer academic. Beneath the polemics were agreements in theory, disagreements in practice. Heifetz brooded over the impasse and, being a good businessman as well as a good sport, approached the Museum of Modern Art last year with an idea for a lamp competition: The lamps were to be portable and use incandescent bulbs. Because the retail market revealed a 7-to-2 ratio of table lamps over floor models, the prizes would be arranged accordingly. This above all—the lamps would be utilitarian and good looking but must not disturb the tranquil eloquence and line of contemporary homes. Heifetz agreed to put up the ante and manufacture several of the winning designs; the Museum could select the judges and exhibit the results. One of the first chosen for jury duty was Marcel Breuer. Others on the panel were Architect Philip Johnson, THE MAGAZINE OF BUILDING's Peter Blake, the Museum's director Rene D'Harnoncourt, department store buyer Louise Dunbar, designer and lighting engineer Richard Kelly, and Mr. Heifetz.

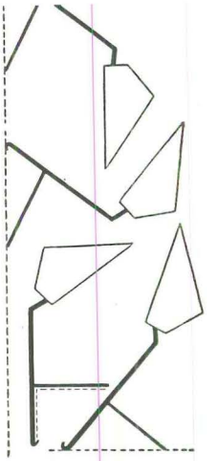
Last month the contest results were on display at the Museum and in department stores (including three Macy's). The rod-legged lamps should be at home with current, space-conscious furniture.

The jury apparently deemed flexibility essential to good lamps and, in some, esthetics might have been sacrificed for gymnastics. Al-

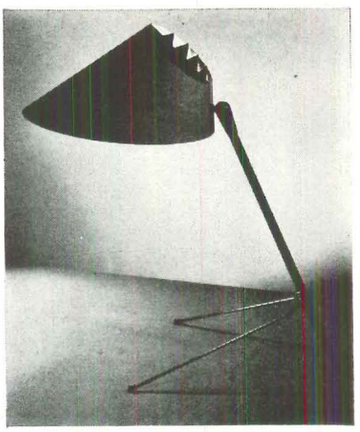
(Continued on page 264)

A hyperbolic funnel contains the light and directs it at a polished disc. The pitch of the reflector is altered by moving the cork-balled rods.

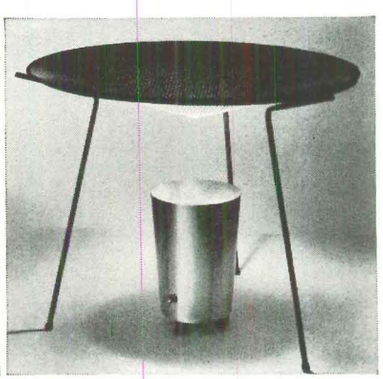




The gray metal bonnet's height and angle are adjusted by squeezing the short legs together and moving them up or down the stem. Fins on the shade control light spill. The lamp also may be used as a wall fixture.





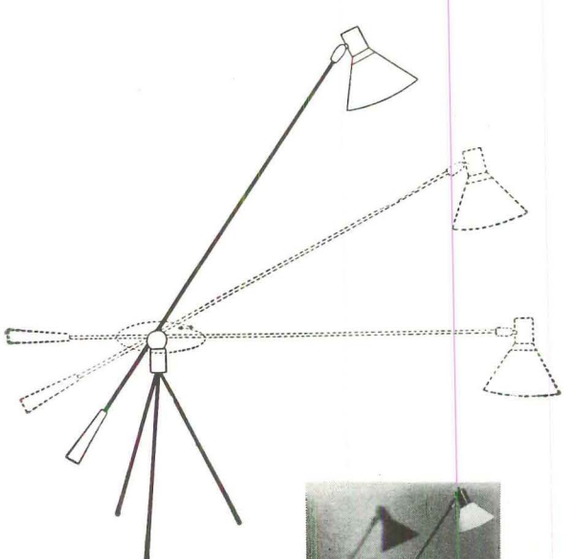


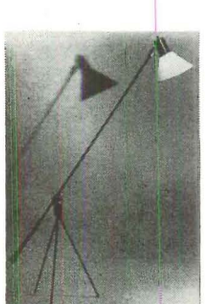
Two independent elements make up first prize winning table lamp: an 8½" high brass husk and a perforated paper cone on a tripod. For diffused light, the cup is set directly beneath the cone. Light reflected from the shallow cone's foil undersurface may be regulated for reading by shifting the cup.

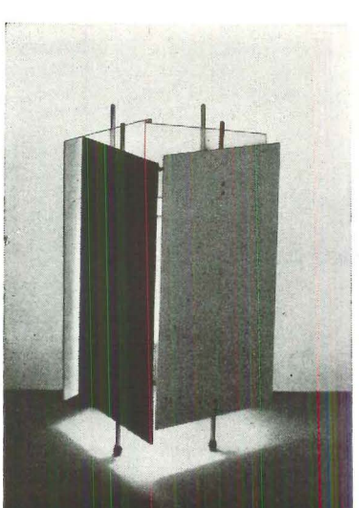
This inexpensive ($13) lamp's opaque paper shade rests on three wood legs for direct light, is reversed for indirect.

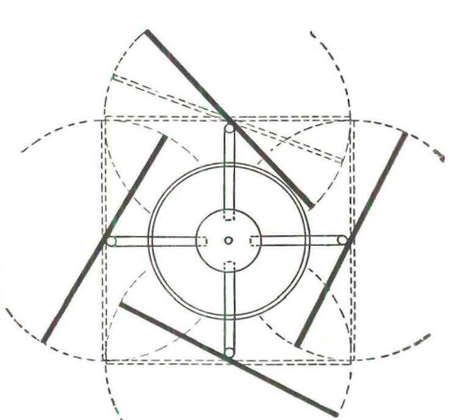
The diminutive floor lamp utilizes an ingenious magnetic ball and socket joint. Its main stem passes through the ball at an angle so that the lamp may be pushed gently to almost any position. For added flexibility, the plastic shade is attached to a swivel socket.





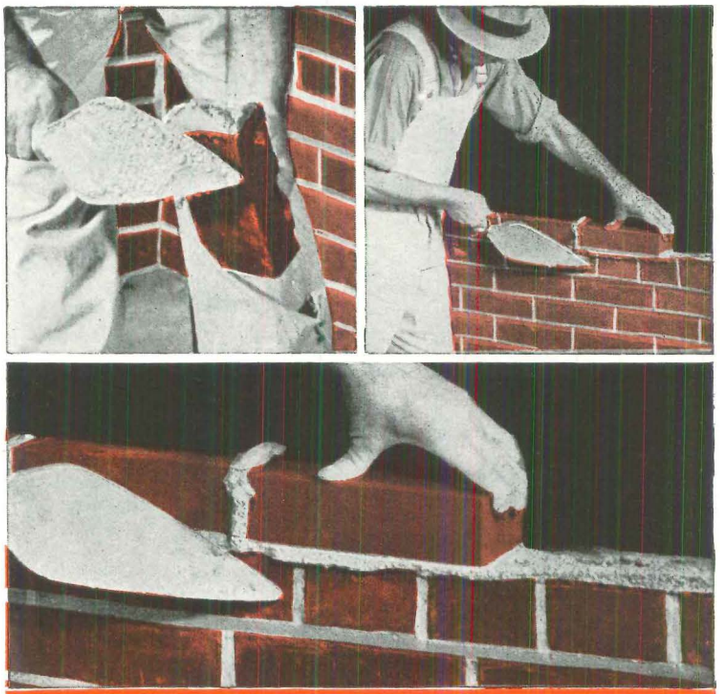






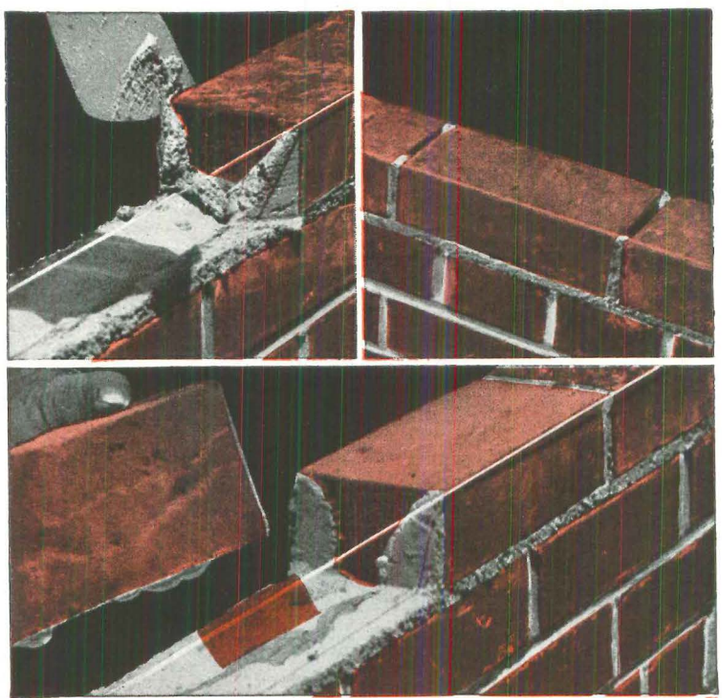
Four 15 x 8" panels, two yellow and two gray, are pivoted on metal rods to control the amount and direction of light from the plastic cylinder within. The lamp will sell for $23.50.

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GOOD WORKMANSHIP

Plenty of mortar should be thrown on the end of the brick to be placed. The brick should then be pushed into place, so that mortar oozes out of the head joint.



POOR WORKMANSHIP

When dabs of mortar are spotted on the corners of the brick, the mortar does not completely fill the head joint, and voids are still left.

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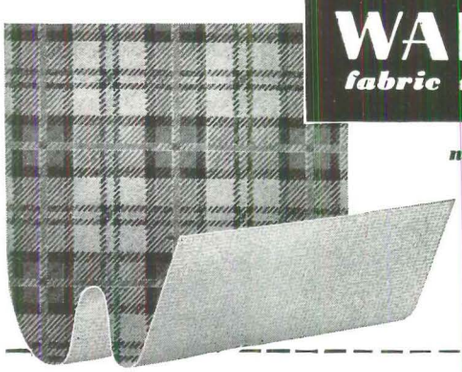
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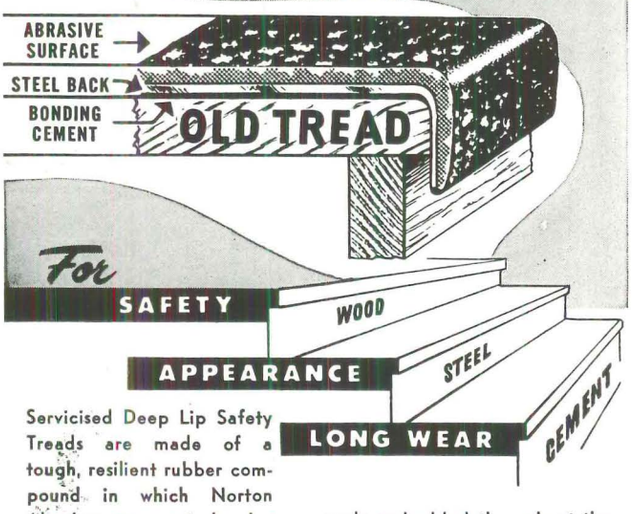
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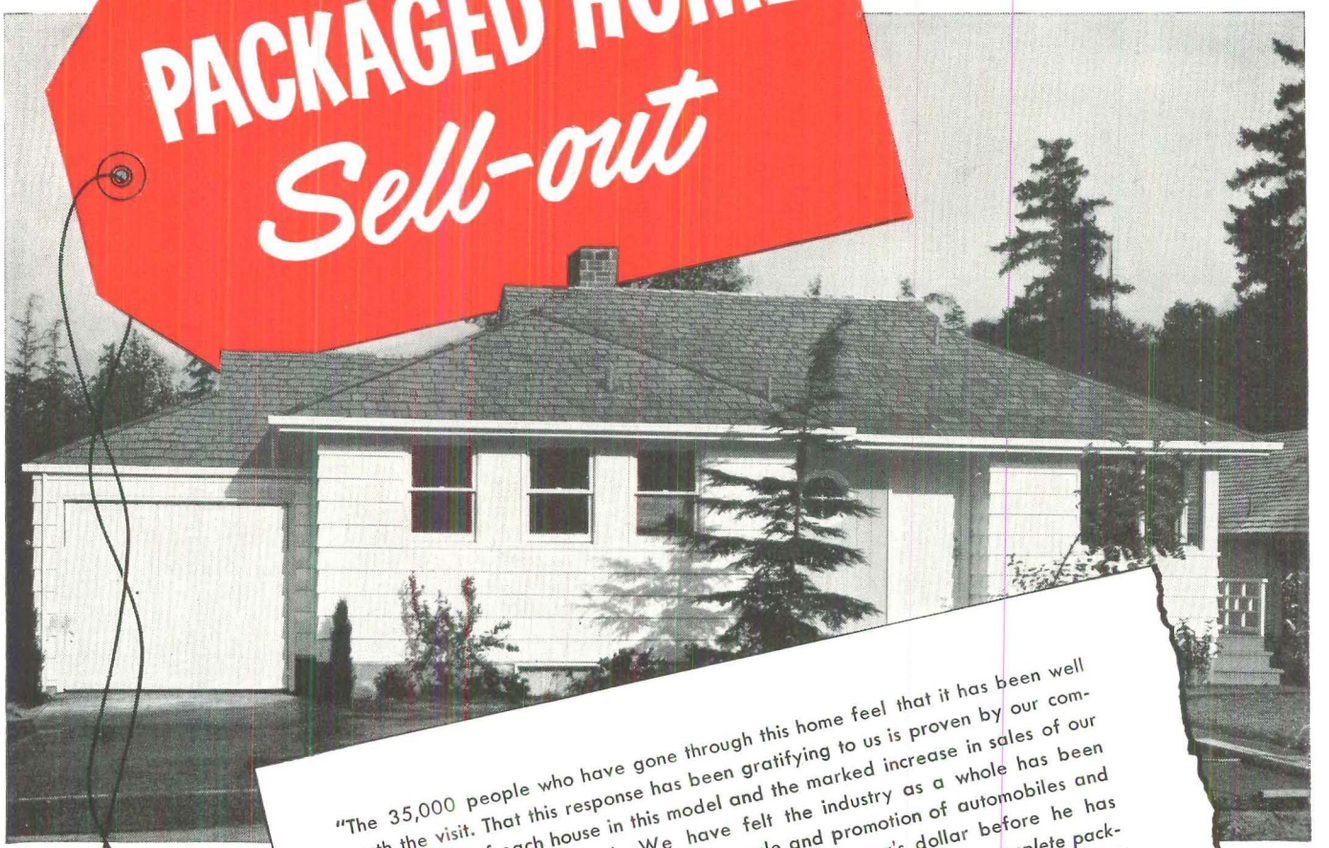
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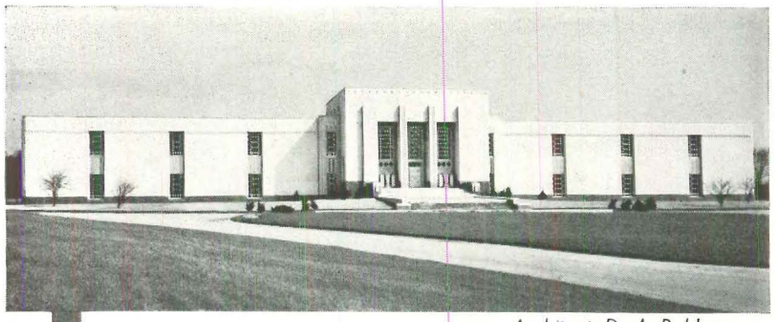


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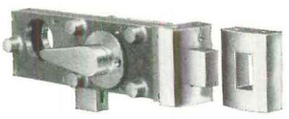


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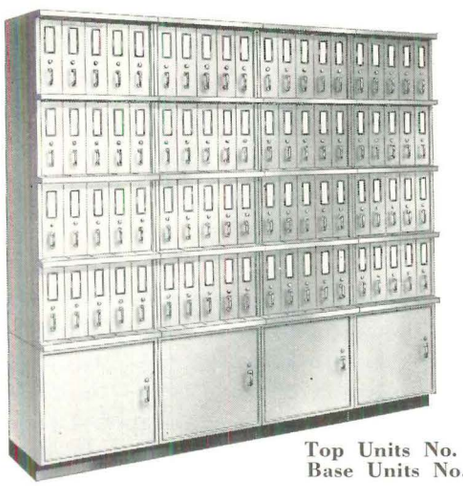


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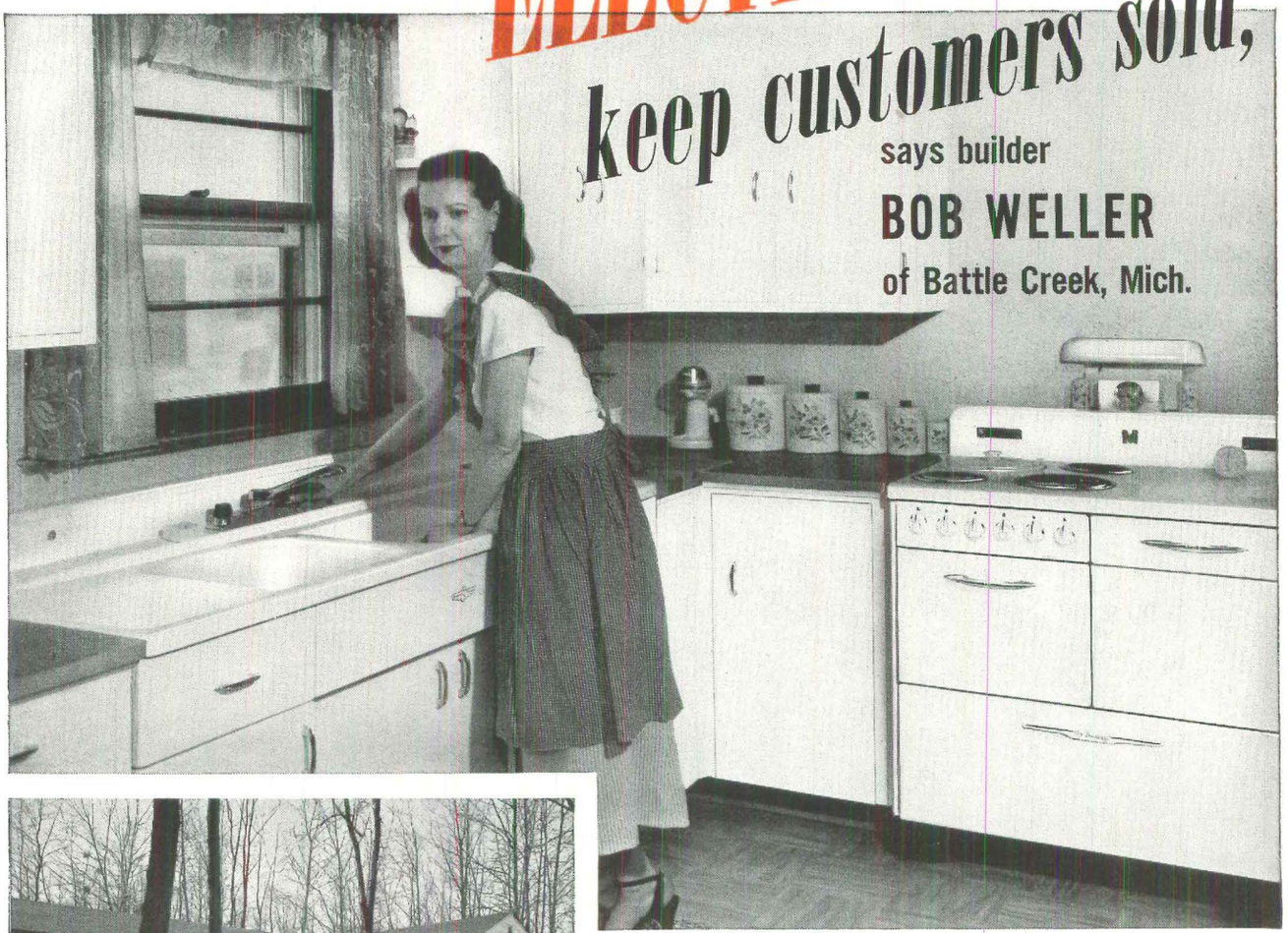
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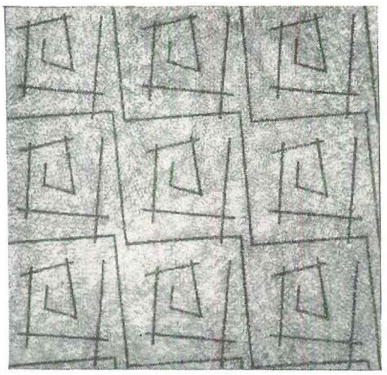
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most all of the winners featured a gimmick—a screw, pivot, clamp or hinge—which would raise or lower the lamp or change its function. So that Museum visitors could experience the lamp's multiplicity, a table of duplicate models was available for puttering.

There was a dual denouement to the competition: 1) Not one of the models resembles Heifetz's own line of ceramic and wood statuary lamps; 2) Breuer has ordered several of the new lamps for his clients.—M.N.G.



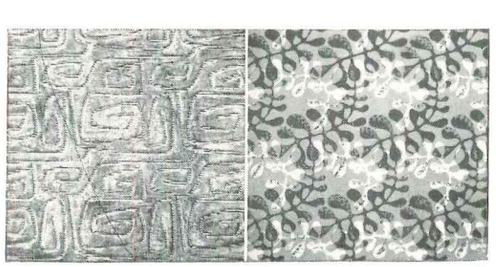
The classic Greek key inspired the carpet design which took first prize in the carpet contest.



CARPET DESIGN CONTEST draws geometric doodles, few hearts and flowers

Like lamp manufacturer Heifetz, carpet distributor Arthur Fleischman felt that fresh stimulus was needed in structural accessories. In this field, solid color broadlooms were strong sellers but decorators and architects shied past the hackneyed florals which dominated the patterned rugs on the market. To meet the demand for good contemporary patterns and to provide incentive for designers. Fleischman sponsored a carpet competition which was administered by the Detroit Institute of Arts. The idea was truly commendatory and certainly should receive bravo's from the building industry. The results, announced last month, were not completely satisfactory. Of the 1,200 entries submitted by professionals and students the jury selected three winners and five honorable mentions. Four factors were considered: overall design; general use (for home, institution or movie lobby—a difficult criterion because of varying demands in scale); ease of production; and probable acceptability by the public. One hundred were picked for exhibit at the Institute and soon will be touring other museums throughout the country.

The prize winners were selected from the relatively few conceptions which were actually designs for carpets. The majority were motifs for wallpapers and drapery fabrics. One, a wash rendering of a diagonal plaid in gray and white, is translatable only in silk chiffon. Some make charming abstractions if confined to a modest square yard but cannot take large scale multiplication. Others that will lie down and behave like floor materials are more adaptable to linoleum than to textured coverings. Several that are distinctly textural can be reproduced faithfully only on handlooms. It was evident that a good carpet is not easy to design. More than any other item of furnishing a carpet has to act as mediator for a room. It must be approachable from all directions and must stay "underfoot." A monotone is the simplest answer; a livable pattern, a challenging problem.—M.N.G.





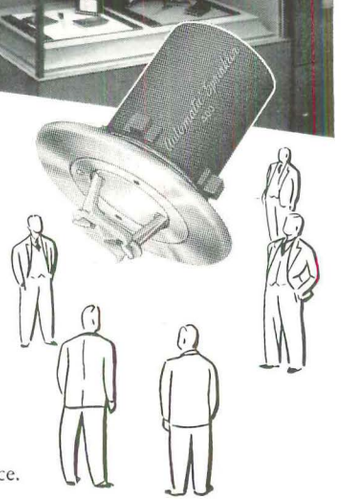
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Full particulars on the "Automatic" 400" Ceiling Sprinkler are available through our nation-wide network of district representatives or you may write direct for descriptive literature.

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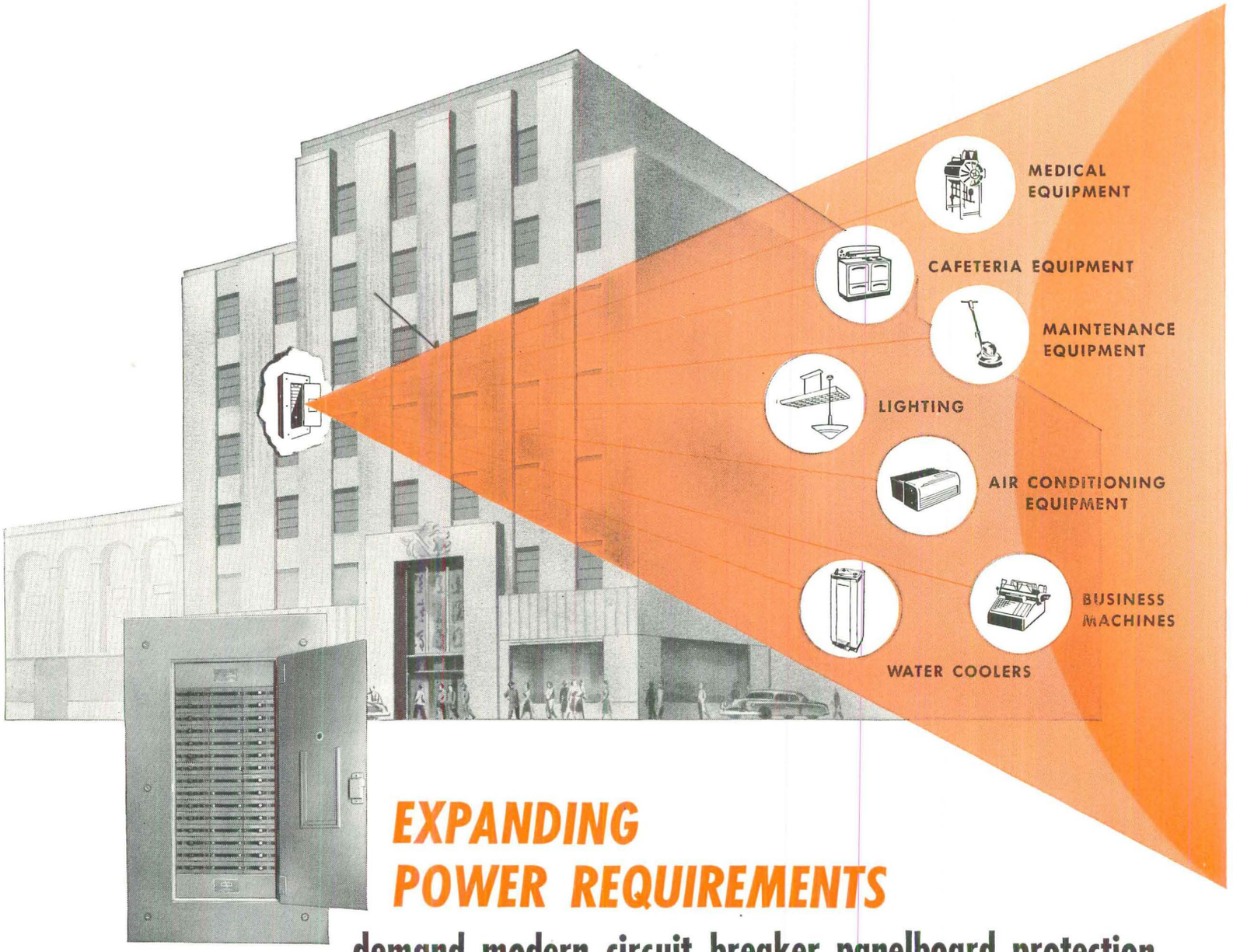


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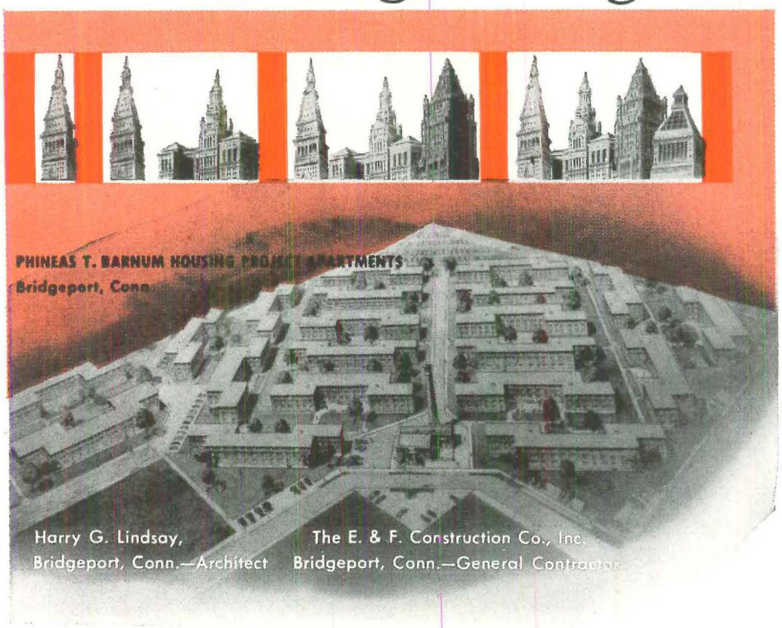
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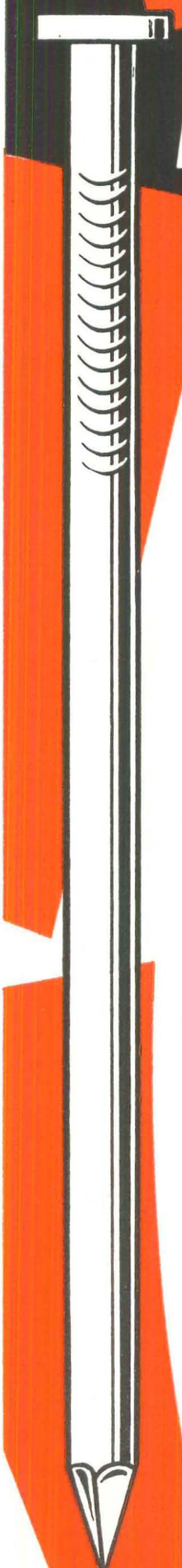
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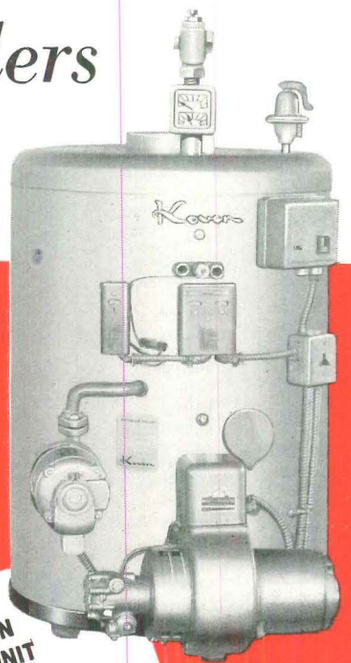
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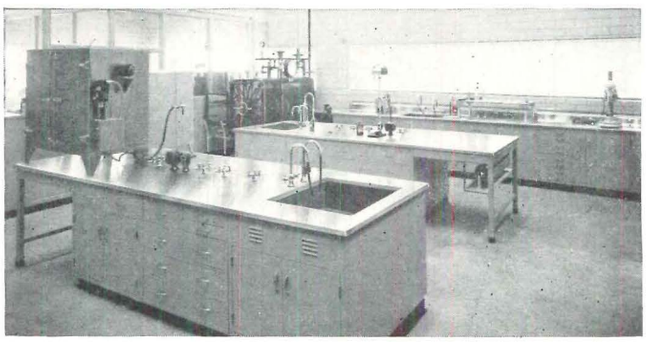
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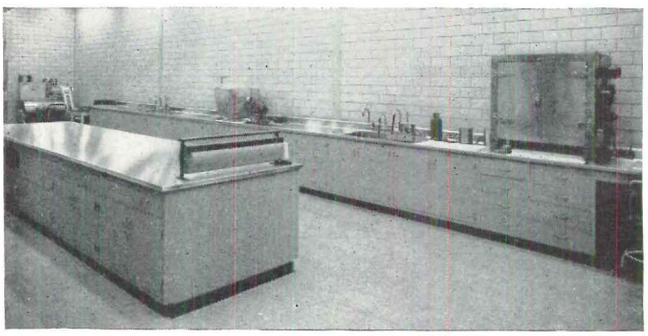
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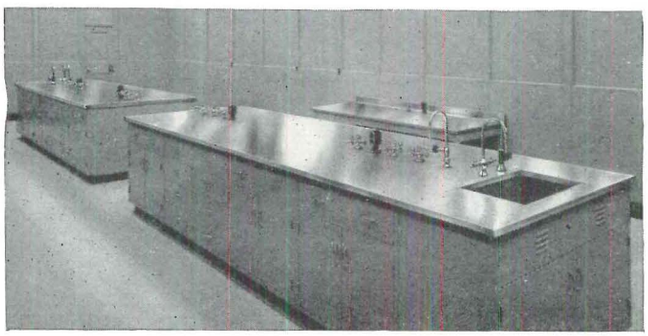
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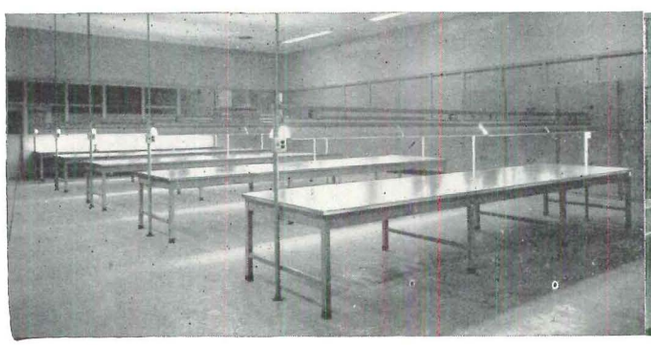
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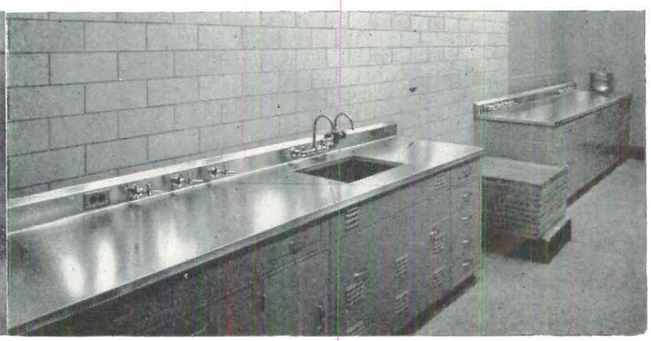
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